

Support Document for the Revised National Priorities List Final Rule - September 2003

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ABSTRACT

Pursuant to Section 105(a)(8)(B) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), the U.S. Environmental Protection Agency (EPA) periodically adds hazardous waste sites to the National Priorities List (NPL). Prior to actually listing a site, EPA proposes the site in the *Federal Register* and solicits public comments.

This document provides responses to public comments received on one site proposed on June 14, 2001 (66 FR 32287), two sites proposed on September 5, 2002 (67 FR 56794), and two sites proposed on April 30, 2003 (68 FR 23094). All of the sites are added to the NPL based on an evaluation under the HRS. These sites are being added to the NPL in a final rule published in the *Federal Register* in September 2003.

CONTENTS

Executive Summary	v
Introduction	vii
Background of the NPL	vii
Development of the NPL	viii
Hazard Ranking System	ix
Other Mechanisms for Listing	x
Organization of this Document	x
Glossary	xi
Region 5	
Section 1.1: Matthiessen & Hegeler Zinc.	1.1-1
Section 1.2: Lammers Barrel	1.2-1
Region 6	
Section 2.1: Jones Road Ground Water Plume	2.1-1
Region 7	
Section 3.1: Madison County Mines	3.1-1
Region 10	
Section 4.1: Harbor Oil, Inc.	4.1-1

EXECUTIVE SUMMARY

Section 105(a)(8)(B) of CERCLA, as amended by SARA, requires that the EPA prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. An original NPL was promulgated on September 8, 1983 (48 FR 40658). CERCLA also requires the EPA to update the list at least annually.

This document provides responses to public comments received on one site proposed on June 14, 2001 (66 FR 32287), two sites proposed on September 5, 2002 (67 FR 56794), and two sites proposed on April 30, 2003 (68 FR 23094). All of the sites are added to the NPL based on an evaluation under the HRS. These sites are being added to the NPL in a final rule published in the *Federal Register* in September 2003.

The five sites addressed in this document are listed in the following table.

SITES ADDRESSED IN THIS DOCUMENT

Region	State	Site Name	City	Proposal Date	HRS Score	
					Proposed	Final
5	IL	Matthiesen & Hegeler	LaSalle	June 14, 2001	50.00	50.00
5	OH	Lammers Barrel	Beaver Creek	September 5, 2002	69.33	69.33
6	TX	Jones Road Ground Water Plume	Harris County	April 30, 2003	50.00	50.00
7	MO	Madison County Mines	Fredericktown	April 30, 2003	58.41	58.41
10	OR	Harbor Oil, Inc.	Portland	September 5, 2002	48.00	48.00

INTRODUCTION

This document explains the rationale for adding seven sites to the NPL of uncontrolled hazardous waste sites and also provides the responses to public comments received on the sites. The EPA proposed one site on June 14, 2001 (66 FR 32287), two sites on September 5, 2002 (67 FR 56794), and two sites on April 30, 2003 (68 FR 23094). All of the sites are added to the NPL based on an evaluation under the HRS. These sites are being added to the NPL in a final rule published in the *Federal Register* in September 2003.

Background of the NPL

In 1980, Congress enacted CERCLA, 42 U.S.C. Sections 9601 *et seq.* in response to the dangers of uncontrolled hazardous waste sites. CERCLA was amended on October 17, 1986, by SARA, Public Law No. 99-499, stat., 1613 *et seq.* To implement CERCLA, EPA promulgated the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, on July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981). The NCP, further revised by EPA on September 16, 1985 (50 FR 37624) and November 20, 1985 (50 FR 47912), sets forth guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants. On March 8, 1990 (55 FR 8666), EPA further revised the NCP in response to SARA.

Section 105(a)(8)(A) of CERCLA, as amended by SARA, requires that the NCP include

criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis (CERCLA Section 101(23)). Remedial action tends to be long-term in nature and involves response actions that are consistent with a permanent remedy for a release (CERCLA Section 101(24)). Criteria for placing sites on the NPL, which makes them eligible for remedial actions financed by the Trust Fund established under CERCLA, were included in the HRS, which EPA promulgated as Appendix A of the NCP (47 FR 31219, July 16, 1982). On December 14, 1990 (56 FR 51532), EPA promulgated revisions to the HRS in response to SARA, and established the effective date for the HRS revisions as March 15, 1991.

Section 105(a)(8)(B) of CERCLA, as amended, requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the NPL.

An original NPL of 406 sites was promulgated on September 8, 1983 (48 FR 40658). At that time, an HRS score of 28.5 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites,

as suggested by CERCLA. The NPL has been expanded several times since then, most recently on April 30, 2003 (68 FR 23077). The Agency also has published a number of proposed rulemakings to add sites to the NPL. The most recent proposal was on April 30, 2003 (68 FR 23094).

Development of the NPL

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]):

The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The purpose of the NPL, therefore, is primarily to serve as an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

Hazard Ranking System

The HRS is the principle mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors, that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category has a maximum value. The categories include:

- likelihood that a site has released or has the potential to release hazardous substances into the environment;
- characteristics of the waste (toxicity and waste quantity); and
- people or sensitive environments (targets) affected by the release.

Under the HRS, four pathways can be scored for one or more threats:

- Ground Water Migration (S_{gw})
 - drinking water
- Surface Water Migration (S_{sw})
 - These threats are evaluated for two separate migration components (overland/flood and ground water to surface water).
 - drinking water
 - human food chain
 - sensitive environments
- Soil Exposure (S_s)
 - resident population
 - nearby population
 - sensitive environments
- Air Migration (S_a)
 - population
 - sensitive environments

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100:

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway. For example, buried leaking drums of hazardous substances can contaminate drinking water wells, but -- if the drums are buried deep enough and the substances not very volatile -- not surface water or air.

Other Mechanisms for Listing

Aside from the HRS, there are two other mechanisms by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score.

The last mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets all three of these requirements:

- Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
- EPA determines the site poses a significant threat to public health; and
- EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.

Organization of this Document

Each section that follows addresses site-specific public comments. The sites are arranged by EPA Region and are listed alphabetically by state and site name. Each site discussion begins with a list of commenters, followed by a site description, a summary of comments, and Agency responses. A concluding statement indicates the effect of the comments on the HRS score for the site.

Glossary

The following acronyms and abbreviations are used throughout the text:

Agency	U.S. Environmental Protection Agency
ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601 <i>et seq.</i> , also known as Superfund
EPA	U.S. Environmental Protection Agency
HRS	Hazard Ranking System, Appendix A of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
HRS Score	Overall site score calculated using the Hazard Ranking System; ranges from 0 to 100
NCP	National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
NPL	National Priorities List, Appendix B of the NCP
NPL-###	Public comment index numbers as recorded in the Superfund Docket in EPA Headquarters and in Regional offices
PA/SI	Preliminary Assessment/Site Inspection
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act of 1976 (U.S.C. 9601-6991, as amended)
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision, explaining the CERCLA-funded cleanup alternative(s) to be used at an NPL site
SARA	Superfund Amendments and Reauthorization Act of 1986, Public Law No. 99-499, stat., 1613 <i>et seq.</i>

Region 5

1.1 Matthiessen and Hegeler Zinc Company, LaSalle County, LaSalle, Illinois

1.1.1 List of Commenters/Correspondents

NPL-U36-3-6-1-R5	Comment dated July 18, 2001 from William Wallock, President, SOLVE
NPL-U36-3-6-2-R5	Comment dated August 13, 2001 from Mark Robert Sargis of Bellande, Cheely, O'Flaherty, Sargis & Ayres on behalf of Carus Chemical Company
NPL-U36-3-6-3-R5	Comment dated August 11, 2001 from Dr. Franklin Jasiek, private citizen of LaSalle, Illinois and the co-chairmen of the Watershed Planning Committee for the Little Vermilion River
NPL-U36-3-6-4-R5	Comment dated August 12, 2001 from Richard Rosploch, private citizen of LaSalle, Illinois
NPL-U36-3-6-5-R5	Comment dated August 10, 2001 from Dr. John P. Lavieri of LaSalle Oral Surgery
NPL-U36-3-6-L1-R5	Comment dated August 23, 2001 from Cynthia Carus and Frederick Carus, citizens of Peru, Illinois
NPL-U36-5-6-R5	Correspondence dated August 31, 1999 from the Honorable George H. Ryan, Governor of Illinois

1.1.2 Site Description

The Matthiessen and Hegeler Zinc Company is an inactive primary zinc smelter and rolling facility located on the east side of the city of La Salle, Illinois. The facility began operations in 1858 and operated until 1978 and, during its years of operation, covered an area of approximately 160 acres. The property contains two slag waste disposal areas that were created while the smelter was in operation and are located on a vacant portion of the property. Samples collected from these waste piles indicated that they contain elevated concentrations of several metals including cadmium, copper, chromium, lead, nickel and zinc.

During the 1993 CERCLA Integrated Assessment sampling event, several soil samples were collected from nearby residences' yards. Residential properties are located to the north and west of the former smelter property. Many of these were found to contain elevated levels of metals which are associated with the site. The soil exposure pathway was not scored, however, because there was insufficient information to produce an accurate score.

The site was scored based on the surface water migration pathway. Storm water runoff from the waste piles flows directly into the adjacent Little Vermilion River. One of the waste piles has been observed in the Little Vermilion River. Samples that were collected in the sediment of the river were found to contain elevated levels of the same metals as were found in the waste piles (e.g., cadmium, copper, lead, nickel and zinc), indicating that the river is being impacted by the former waste handling activities at the site.

The human food chain threat was scored based on the fact that the State of Illinois identifies the Little Vermilion River as a fishery populated with small mouth bass, bluegill, sunfish, crappie, channel catfish, bullhead, carp and drum fish.

1.1.3 Summary of Comments/Correspondence

The Honorable George H. Ryan, Governor of Illinois at the time of proposal, supported the listing of the Matthiessen and Hegeler Zinc Company (M & H Zinc) site on the NPL because the evaluation of this site indicates that it has “contributed to a number of public health and environmental concerns.” Mr. William Wallock, Dr. Franklin Jasiek, Mr. Richard Rosploch and Dr. John P. Lavieri also commented in favor of placing the M & H Zinc site on the NPL.

The Carus Chemical Company commented that it did not support the listing of the site on the NPL because there were errors in the HRS documentation record at proposal concerning the toxicity value for cadmium that resulted in an incorrect HRS score. It also asserted that the Carus Chemical facility should not be held liable, should be considered an innocent landowner, and should not be associated with the contamination from the former M & H Zinc operations. The Carus Chemical Company contended that the risks to human health and the environment associated with this site are not sufficient to warrant listing the site on the NPL and should not be considered a priority.

The Carus Chemical Company asserted that the HRS score is “technically flawed and results in an erroneous score.” It indicated that the HRS documentation record at proposal contained scoring errors due to the incorrect toxicity value for cadmium, delineation of sources, observed release, attribution and sampling strategy that, if corrected, drop the site score below 28.50. It concluded that “there is currently no defensible scientific basis consistent with the HRS that can support the proposed listing.”

Mr. Frederick Carus and Ms. Cynthia Carus requested that the M & H Zinc site not be placed on the NPL because the site does not present a public health threat. In addition, they asserted that the score was calculated incorrectly and that there are several incorrect statements dealing with observed release by direct observation and attribution in the HRS documentation record at proposal.

1.1.3.1 Support for Listing

The Honorable George H. Ryan, Governor of Illinois at the time of proposal, expressed support for the listing of the M & H Zinc site on the NPL.

Mr. Wallock, President of SOLVE (Save Our Little Vermilion Environment) stated that this organization supported the listing of this site on the NPL. He asserted that “immediate attention [should] be given to

the cleanup project.” He commented that after a recent visit to the Little Vermilion River, “clinker piled up at the mouth of the river, downstream approximately ½ mile from the M&H site, indicates movement or migration from the upstream site.” Mr. Wallock also indicated that he was concerned about “adjacent public and private properties including nearby schools and parks” in the area that may be affected. He stated that “[t]his site is an impediment to the continuing development of the Little Vermilion River Valley as a recreational greenway!”

Dr. Jasiek commented that he was writing to “encourage and endorse putting the M&H Zinc site onto the NPL.” He is “strongly in agreement with the suggestion that steps must be taken to control the introduction of the cadmium, lead, zinc, copper, nickel, chromium and acidic liquid into the waterway which is so vital to the health and safety of humans as well as to the plant and animal population.” Dr. Jasiek concluded that “[b]ioaccumulation is a slow and permanent occurrence and is devastating to life in every form.”

Mr. Rosploch commented that “I strongly recommend this site be placed on the Superfund List.” He stated that he is concerned about the drinking water supply in this area. Mr. Rosploch asserted that his drinking water well is “only 100 yards from the little Vermilion River and 1½ miles down stream from the proposed superfund cleanup site.” He “would like to see the complete removal of all old and present sewer storm drains running through the M & H property site as soon as possible to stop further leaching of chemicals and heavy metals into the Little Vermilion River.” Mr. Rosploch stated that he hopes this site “will become a priority because of its location on the banks of the Little Vermilion and the danger it presents to the people of the Illinois Valley.”

Dr. Lavieri stated that “I strongly encourage the placement of the M and H site on the ‘Superfund’ list for immediate attention.” He asserted that he is “concerned about the effects of the contamination upon the surrounding neighborhood and the Little Vermilion River.” Dr. Lavieri stated that the contamination may affect the municipal water supply “which draws from shallow wells near the river.” He also commented that there are “plans for a recreational greenway along the Little Vermilion and the presence of the site presents a safety concern.”

In response, the Agency has added the Matthiessen & Hegeler Zinc site to the NPL. Listing makes a site eligible for remedial action funding under CERCLA, and EPA will examine the site to determine what response, if any, is appropriate. Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and upon more detailed investigation may not be necessary at all in some cases. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, State priorities, further site investigation, other response alternatives, and other factors as appropriate. EPA will not stop work at some sites to begin work at other higher-scoring sites added to the NPL more recently.

1.1.3.2 Economic Impact

The Carus Chemical Company contended that placing this site on the NPL “can impose serious adverse legal and financial consequences for an owner of property, such as Carus Chemical Company, which hopes to continue business operations and employment at its facility.” The Carus Chemical Company asserted that “EPA policy, scarce Superfund resources, responsible government, and the public interest all point to the conclusion that EPA should not list the M&H Site on the NPL.” It asserted that

“[w]hether or not EPA proceeds further with action at the M&H Site, further investigations of the Carus Chemical facility under CERCLA authority and the commensurate expenditure of public and private funds simply are not warranted.” The Carus Chemical Company indicated that adding the M & H Zinc site to the NPL would promote “severe adverse consequences on the current business operation of a private company” and “the NPL process imposes substantial liability and responsibility on limited public resources, regardless of the (sic) how remedial action is ultimately financed.”

In response, the NPL serves as an informational list. Inclusion of a site or facility on the list does not in itself reflect a judgement of the activities of its owner or operator, but rather reflects EPA’s judgement that a significant release or threat of release has occurred, and that the site is a priority for further investigation under CERCLA. Furthermore, the focus of the CERCLA program is to identify and, where necessary, address hazardous substances releases that may pose a threat to health or the environment. In specifying the criteria for listing sites (Section 105(a)(8)(A) of CERCLA), Congress did not require that EPA consider the possibility that listing may have adverse economic impacts and the HRS scoring process does not use that as a factor in scoring sites for the NPL.

Further, if the properties in question are found to require remediation, the landowners may choose to resolve any liability through the application of the *de minimis* settlement provisions of Section 122(g)(B) of CERCLA. A person who acquires already contaminated property and who can satisfy the remaining requirements of Section 101(35) and Section 107(b)(3) may be able to establish a defense to liability. (Also see U.S. EPA, *Guidance on Landowner Liability under Section 107(a)(1) of CERCLA*, www.epa.gov/compliance/resources/policies/cleanup/superfund/liab-landownr-mem.pdf. Last updated: May 13, 2003. Accessed: July 14, 2003).

1.1.3.3 Liability

The Carus Chemical Company contended that it “should be considered an innocent landowner to the same extent as nearby residential property where contamination from former M&H operations might be located” because it did not contribute to the contamination, and the HRS documentation record at proposal does not dispute this fact.

Mr. Carus and Ms. Carus stated that they have an agreement with the City of LaSalle “that the old collapsed storm sewer was to be filled in and the drainage path stopped in consideration of the new four acres storm sewer easement” which improved the management of the storm water from La Salle. They indicated that the City “is responsible for eight acres of easement property” and that the “City maintains and monitors this outflow.”

In response, the listing of this site will impose no liability or direct costs on the Carus Chemical Company. Whether the Carus Chemical Company is liable for response costs for a release of hazardous substances depends on whether it is liable under CERCLA 107(a). Any such liability exists no matter whether the site is listed on the NPL. The listing of this site establishes no standards or regulatory regime that the Carus Chemical Company must meet.

With regard to the comment concerning the storm sewer, EPA acknowledges these comments, but at one time the storm sewer line did drain the site. The storm sewer line was a part of the hazardous substance migration path for this site. According to page 18 of the HRS documentation record at proposal, the

runoff from the shallow wastepile (Source 2) flows into the Little Vermilion River through natural drainage which enters an old abandoned and collapsed storm sewer line which was formerly used by the city of LaSalle. The fact that the city filled in of the storm sewer drainage path did not address the contamination that had come from it.

1.1.3.4 Future Land Use

Mr. Carus and Ms. Carus indicated that they “have purposely paid the taxes, limited the activity and prevented disruption to the site.” They concluded that they “believe in private ownership and have no desire to see this property be a public recreational greenway over an old industrial site.”

In response, according to OSWER Directive 9355.7-04, “*Land Use in the CERCLA Remedy Selection Process*,” in order to ensure that there are realistic assumptions concerning future land uses at a site, “EPA should discuss reasonably anticipated future uses of the site with local land use planning authorities, local officials, and the public, as appropriate, as early as possible during the scoping phase of the RI/FS.” The guidance also notes that “EPA should make an extra effort to reach out to the local community to establish appropriate future land use assumptions at such sites.” The remedial actions objectives developed during the RI/FS stage should reflect the reasonably anticipated future land uses for the site.

1.1.3.5 Site Definition

The Carus Chemical Company prepared a number of comments with regard to including its main plant facility as part of the boundary for the M & H Zinc site. It stated that “there appears to be no basis for including Carus Chemical’s main plant facility as part of the M&H Site, either for purposes of scoring or for any subsequent determination of the Site’s boundaries.” In fact, the Carus Chemical Company asserted that its company and the M & H Zinc site “were identified separately by IEPA and placed on CERCLIS.” It continued that Illinois EPA “appears to recognize that there is (and should be) a difference between the former M&H property lines and the ‘boundary’ of the M&H Site.” In addition to these comments, the Carus Chemical Company asserted that it should be excluded from the listing for the following reasons:

- “Carus Chemical has not contributed to potential metal contamination of the Little Vermillion River.” “Carus Chemical is not responsible for any of the metals or other potential contamination from the M&H Site.” In fact, it claimed that manufacturing operations conducted at the main plant area “do not contribute to the metal impacts documented in river sediments by the IEPA.” It stated that the HRS documentation record at proposal does not attribute the metal contamination detected in the Little Vermilion River to the Carus Chemical Company.
- The exclusion of its main plant “is justified by legal, technical and practical considerations.”
- The HRS documentation record at proposal (Figure 2-2) presented the boundaries of the M & H Zinc site “to incorporate the entire contiguous Carus Chemical Company properties, including the main plant area, as well as other portions of property currently owned by the Carus Chemical Company.”

- Although the Carus Chemical facility is located within the former M & H Zinc property, “neither of the two sources of hazardous substances scored by the Illinois EPA are located within the fence line of the Carus Chemical facility.”
- That “most of the Carus Chemical facility is not even located on property formerly owned by M&H” and “[e]ven if portions of the M&H Site would qualify for the NPL, those portions are not located within the fence line of Carus Chemical’s main plant facility.”
- The “main plant area of the site contains all of the Carus Chemical Company manufacturing and distributing facilities,” and this area “was not an integral part of the M&H Zinc Company operations.”
- The Carus Chemical Company has “always been a separate operation from M&H and its successors.” In fact, the lowland area was purchased by the Carus Chemical Company in 1973 from M & H Zinc site.
- The lowland area is a parcel of land that “contains the outfall for non-contact cooling water from the Carus Chemical Company plant, a holding pond with a regulated National Pollution Discharge Elimination System (NPDES) discharge point to the Little Vermilion River, as well as a portion of the slag pile (Source No. 1 in the HRS Documentation Record).”
- The slag pile contains waste from the zinc smelting operations conducted at the former Matthiessen & Hegeler Zinc Company “prior to acquisition by the Carus Chemical Company.”
- Historical documents and the results of “extensive investigations performed at the Carus Chemical Company, [document that] no slag is present on the main plant area of the Carus Chemical Company.”
- The source of metal contamination in the Little Vermilion River as reported in the HRS documentation record at proposal is from run-off from the two waste piles (source 1 and source 2), and source 1 is located on a portion of the property now owned by the Carus Chemical Company, while source 2 is located on the former M & H Zinc Company facility.
- “Neither sources (sic) of run-off that contribute to the metals in the river are located on the main plant area of the Carus Chemical Company.”
- The references included in the HRS documentation record at proposal “indicate that the proper focus of the site assessment and potential NPL listing is the abandoned areas of the former M&H operations, not the active Carus Chemical plant facility.”
- The main plant facility of the Carus Chemical Company “is not an abandoned site, and the conditions of the Carus Chemical site have been adequately characterized in a series of investigative phases by its own consultant under the supervision and direction of the Illinois EPA.”

For these reasons, the Carus Chemical Company asserted that it is important “to distinguish the current operational facility of Carus Chemical from the largely abandoned areas of the former M&H property.” The Carus Chemical Company concluded that:

[a]lthough the formal site boundaries are not established as part of the HRS scoring process or the proposed listing, the current [HRS] Documentation Record nevertheless results in a certain amount of confusion, misinformation and mischaracterization of the scope of the M&H Site, rather than serving as a reliable and objective source of public information.

In response, EPA did not specifically include or exclude the Carus Chemical Company property in the site in the HRS documentation package at proposal nor does it list sites based on property or physical boundaries. According to the Section 1.1, *Definitions*, of the HRS, a site is defined as an area “where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between sources.” According to pages 7-16 of the HRS documentation record at proposal, the M & H Zinc site is preliminarily defined by the waste that came to be located on two waste piles and includes the area between the waste piles and areas to which waste has migrated. Source 1, wastepile, is located in the southeast portion of the former smelting facility property along the west bank of the Little Vermilion River (Reference 3, Figure 2-3 of the HRS documentation record at proposal). Although Source 1 is not located within the Carus Chemical Company fenced area, it does lie partially on the lowland property Carus Chemical Company purchased from M & H Zinc in 1973. Moreover, page 2-3 of the Carus Chemical Company Phase II Site Investigation Report, dated January, 1996 states that “[b]ased on 1939 aerial photograph, most of the slag pile [Source 1] had already been placed at its current location in the Phase II Area [on Carus Chemical property],” well before this property was purchased by Carus Chemical Company. Source 2, shallow waste pile, is also located on the former smelting facility property north of the Carus Chemical Company property (Reference 3, Figure 2-4 of the HRS documentation record at proposal).

Further, Carus Chemical Company owns three parcels of property on or adjacent to the Matthiessen & Hegeler site. Approximately 15 acres at the south end of the site owned by Carus Chemical Company includes the active manufacturing complex and extends to the Little Vermilion river and includes a portion of the waste pile (Source 1) along the Little Vermilion River. Carus Chemical Company has a fence that extends along the northern side of the main plant facility property, however a portion of this parcel of property extends north, outside of the fence, and includes some of the waste pile.

If the commenter is concerned about liability, as discussed in Section 1.1.3.3 above, liability is not considered in evaluating a site under the HRS. The NPL serves as an informational tool for use by EPA in identifying those sites that appear to present a significant risk to public health or the environment. EPA has placed the M & H Zinc site on the NPL based on an evaluation, in accordance with the HRS, of a release of hazardous substances, pollutants, or contaminants. However, the fact that EPA initially identifies and lists releases based on a review of contamination at a certain parcel of property does not necessarily mean that the site boundaries are limited to that parcel. The extent of a Superfund site is not established by property boundaries, but by where contamination has come to be located.

CERCLA Section 105(a)(8)(A) requires EPA to list national priorities among the known “releases or threatened releases” of hazardous substances; thus, the focus is on the release and not precisely delineated boundaries. Further, CERCLA Section 101(a) defines a “facility” as the “site” where a hazardous substance has been “deposited, stored, placed, or otherwise come to be located.” The “come

to be located” language gives EPA broad authority to clean up contamination when it has spread from the original source. On March 31, 1989 (54 FR13298), EPA stated:

HRS scoring and the subsequent listing of a release merely represent the initial [emphasis added] determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will need to be refined and improved as more information is developed as to where the contamination has come to be located; this refining step generally comes during the RI/FS stage.

In addition, site definition is discussed in Section F of the Preamble to the proposal to add the M & H Zinc site to the NPL (66 FR 32287, June 14, 2001). The Preamble states:

[w]hen a site is listed, the approach generally used to describe the relevant release(s) is to delineate a geographical area (usually the area within an installation or plant boundaries) and identify the site by reference to that area. As a legal matter, the site is not coextensive with that area, and the boundaries of the installation or plant are not the "boundaries" of the site. Rather, the site consists of all contaminated areas within the area used to identify the site, as well as any other location to which contamination from that area has come to be located, or from which that contamination came.

The HRS elaborates on the “come to be located” language, defining “site” as “area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources, and may include the area between the sources.”

Following the listing on the NPL, an RI/FS may be completed and a remedial action may be selected. Until the investigation process has been completed and a remedial action (if any) selected, EPA generally does not attempt to estimate the full extent of contamination at the site, or describe the ultimate dimensions of the NPL site. Even during or following a remedial action (e.g., the removal of buried drums), EPA may find that the contamination has spread further than or not as far as previously estimated, and the known area of the site may be correspondingly expanded.

1.1.3.6 Site Priority

The Carus Chemical Company contended that the HRS score “bears no relation to the conditions at the Site, potential threat to human health or the environment, or the need for further investigation.” The Carus Chemical Company asserted that the potential risks at this site “simply do not rise to the level of a ‘priority.’” It asserted that “[t]he two ‘sources’ tested and scored for the Site by the Illinois Environmental Protection Agency (‘Illinois EPA’) simply do not create a significant enough hazard to human health or the environment to warrant listing the Site as a ‘priority.’” The Carus Chemical Company concluded that the site “is *not* a high enough priority to list on the NPL, a conclusion that is supported by the corrected HRS calculations submitted by GeoSyntec. The HRS documentation record at proposal “misinforms residents of LaSalle County about conditions at, and potential risks associated with, the M&H Site.”

The Carus Chemical Company conducted investigations under the supervision of the Illinois EPA and these investigations “have not revealed a significant risk to human health or the environment.” The Carus Chemical Company commented that the results of these investigations, although they were submitted to the Illinois EPA, were not part of the HRS documentation record at proposal. It asserted that extensive investigations have been conducted at the site and the site has been comprehensively characterized. The Carus Chemical Company contended that this site characterization information “is clearly relevant to the degree of risk to human health and the environment that a proposed site poses,” and this “extensive additional information is available to refine the characterization of the potential site risks.”

The Carus Chemical Company commented that the slag pile was placed by the former M&H Zinc Company along the banks of the Little Vermilion and that, although it is “unsightly, it does not appear to present a significant risk to human health or the environment.” It asserted that the Carus Chemical Company “is not responsible for placing the slag material” and that several investigations were conducted by the Carus Chemical Company to “evaluate portions of the slag pile that exist on property that it now owns beyond its fence line, in addition to investigation at its main plant facility.” The Carus Chemical Company stated that the HRS documentation record at proposal “does not take into account any of the results of the work performed by Carus Chemical.”

The Carus Chemical Company asserted that although the site score is based on toxicity of cadmium, the Public Health Assessment “does not even mention cadmium as a potential off-site risk to the public health.” It claimed that the final report “dropped an earlier reference to cadmium as a potential health risk.” Therefore, the Carus Chemical Company concluded “that there is no other basis in the Documentation Record for finding that cadmium is a significant enough health risk to warrant listing the M&H Site as a ‘priority.’”

In response, EPA has found that the M & H Zinc site poses sufficient relative threat to warrant placement on the NPL, and as explained later in this response, none of the comments on the scoring result in a change in the site score. As stated in Section 1.1.3.7 of this support document, establishing an HRS score of 28.50 or greater for a site is one of three mechanisms, authorized by the NCP at 40 CFR 300.425 for placing sites on the NPL. In addition, the HRS documentation record was prepared in a manner consistent with applicable CERCLA regulations and policy and in accordance with the HRS, which in itself meets the guidelines set forth in CERCLA for identifying and listing hazardous waste sites on the NPL. Further, as discussed in this support document, no commenters have identified any actual errors in this rationale. EPA does not use the site score as a measure of absolute risk. The purpose of the NPL is primarily to serve as an informational and management tool in assessing relative risk. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. EPA stated the following in the Preamble to the HRS:

[b]ecause the HRS is intended to be a *screening* system, the Agency has never attached significance to the cutoff score as an indicator of a specific level of risk from a site, nor has the Agency intended the cutoff to reflect a point below which no risk was present. The score of 28.50 is not meant to imply that risky and non-risky sites can be precisely distinguished. Nevertheless, the cutoff score has been a useful tool that has allowed the Agency to set priorities and move forward with studying and, where appropriate, cleaning up hazardous waste sites. The vast majority of sites scoring above 28.50 in the

past have been shown to present risks (emphasis added) (55 FR 51569 (December 14, 1990)).

With regard to the comments concerning the incorporation of the results of the investigations conducted by the Carus Chemical Company, these reports have been reviewed by EPA. The Carus Chemical Company retained GeoSyntec to conduct several investigations from 1992-1998. These investigations were conducted to characterize the nature and extent of the contamination in the study areas, determine the impact on ground water and the Little Vermilion River, to identify potential sources of any such impact and to satisfy the requirements of the Pre-Notice Program. The result of these investigations was to establish risk-based cleanup levels and to evaluate possible remedial alternatives consistent with applicable standards under CERCLA. These investigations determined that, although hazardous substances were present in soil, sediment and ground water, the levels were below the Illinois Hazardous Waste Management Regulations (IHWMR). Based on the findings, there were “no immediate threats to human health or the environment; therefore, no immediate response actions are warranted.”

It was clear from reviewing the GeoSyntec reports that the scope of these investigations was outside that of NPL listing. In addition, the sampling locations, analytes, and matrices were not the same as those samples collected during the IEPA site investigations. Nonetheless, these reports confirmed the presence of zinc in sediment sample collected at various locations in the Little Vermilion River and cadmium and lead in soil samples collected in the Phase II study area of Carus Chemical Company which included the soil area around, but not including the slag material from Source 1.

Furthermore, HRS Section 2.3, Likelihood of release, states that an observed release can be established either by direct observation or by chemical analysis. An observed release by chemical analysis has occurred when a contaminant is measured significantly above background level if some portion of the release is attributable to the site. Even though levels may be lower than regulatory limits, an observed release has nevertheless occurred if the measured levels are significantly higher than background levels. In addition, the data used in the HRS scoring identified in the HRS documentation record at proposal are adequate to score this site and meet the explicit criteria for both the types and quality of information required by the HRS. Other investigations, such as those submitted by the Carus Chemical Company, may provide useful information during the RI/FS stage of the Superfund process. In addition, the Carus Chemical Company has not presented any specific comments that the data used in the HRS scoring is incorrect or why their data would suggest that the site score is incorrect. The risks associated with slag and the toxicity of cadmium are discussed in this support document.

1.1.3.7 Other Possible Pathways

The Carus Chemical Company asserted that the HRS documentation record at proposal acknowledged that there is insufficient residential sampling to score this site via the soil exposure pathway. The Carus Chemical Company contended that “several residential samples were taken in the vicinity of the M&H Site, both by Illinois EPA and the Illinois Department of Public Health (Public Health Assessment, September 30, 1999), [and that] these results also fail to support the high HRS score of this Site.” In addition, it stated that “sampling on residential property by governmental agencies do [sic] not support the HRS score.”

Mr. Carus and Ms. Carus stated that the statement about the possibility that the contamination threatens approximately 9,881 people living within a one mile radius of the site is “an inappropriate scare tactic.” They indicated that this site does not pose any more threat to the residents of the City of La Salle than the Illinois Zinc site eighteen blocks to the southwest threatens the residents of the City of Peru. They continued that the “current public health records, to our knowledge, do not reflect problems related to the smelters” and that the “[c]urrent LaSalle County Health Department priorities are Substance abuse, family violence and access to dental and health care.”

Mr. Jasiek asserted that the site score was derived from the surface water migration pathway but there seemed to be a “reference to the inhalation route but air wasn’t scored.” He indicated that “[t]he impact of ingestion should be added to get a more accurate number.”

In response, EPA used appropriate sampling information to accurately score the surface water pathway for the M & H Zinc site. With regards to sampling data that do not support the “high HRS score” (e.g., residential property sampling data to score the soil exposure pathway), as indicated on the cover sheet of the HRS documentation record at proposal, the soil exposure pathway was not scored even though soil samples were collected from nearby residences. According to page 5-6 of the 1993 Illinois EPA CERCLA Integrated Site Assessment report for the M & H Zinc site (Reference 3 of the HRS documentation record at proposal), “[s]oil samples collected during the Integrated Site Assessment inspection document areas of observed contamination that are attributable to the site.” These samples in no way undermine the samples used to score this site. In fact, if the residential samples were included in the HRS package, the site score would be increased due to the contamination detected on these properties. Because there was insufficient information to properly document the soil exposure pathway and because there was sufficient information to properly document and score the surface water pathway, the soil exposure pathway was not evaluated as part of the HRS package for the M & H Zinc site. In addition, the air pathway was not scored. The HRS does not require scoring all four pathways if scoring those pathways does not change the listing decision. For some sites, data for scoring a pathway are unavailable, and obtaining these data would be time-consuming or costly. In other cases, data for scoring some pathways are available, but will only have a minimal effect on the site score. In still other cases, data on other pathways could substantially add to a site score, but would not affect the listing decision. The HRS is a screening model that uses limited resources to determine whether a site should be placed on the NPL for possible Superfund response. A subsequent stage of the Superfund process, the RI/FS, characterizes conditions and hazards at the site more comprehensively.

To the extent practicable, EPA attempts to score all pathways that pose significant threats. If the contribution of a pathway is minimal to the overall score, in general, that pathway will not be scored. In these cases, the HRS documentation record may include a brief qualitative discussion to present a more complete picture of the conditions and hazards at the site. As a matter of policy, EPA does not delay listing a site to incorporate new data or score new pathways, if the listing decision is not affected.

EPA must balance the need to fully characterize a site with the limited resources available to collect and analyze site data. For this reason, the EPA generally will not score additional pathways upon receiving new data as long as the site still meets the HRS cutoff score. However, any additional data characterizing site conditions could provide useful information during the RI/FS.

With regard to the comments concerning the possibility that the contamination threatens approximately 9,881 people living within a one mile radius of the site, for HRS purposes people living or working within one mile of a site are considered threatened via the soil exposure pathway. The HRS defines the

nearby population threatened by the contamination as those individuals that live, attend school or work within one mile of the area of observed contamination at the site. EPA has data that indicates a possible residential soil exposure threat and the discussion regarding this data was placed in the record to inform the public that EPA would be investigating this issue in further actions. Since the soil exposure pathway was not scored for this site, no changes were necessary to the HRS documentation record as proposed.

With regard to the comments that current public health records do not reflect problems related to the smelter, as previously stated, the purpose of the NPL is primarily to serve as an informational and management tool in assessing relative risk. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site.

1.1.3.8 Use of Sediment Samples

Mr. Carus and Ms. Carus commented that the site was scored based on the surface water overland/flood migration pathway “without water samples taken” and, therefore, the site score is “skewed and misleading.” Mr. Carus and Ms. Carus also commented that, in addition, water samples collected from the Little Vermilion River by the City of La Salle in 1995 indicated that “minimal to less than allowable limits of the heavy metals cadmium, lead and zinc” were detected. They stated that “[t]he City of La Salle’s twenty-year test records of their well water system near the mouth of the Little Vermilion River indicate no detrimental levels of the heavy metals cadmium, lead and zinc.”

In response, the HRS does not require surface water samples to evaluate the surface water pathway. Consistent with the HRS and as stated on pages 7-16 of the HRS documentation record at proposal, IEPA utilized analytical data from sources with containment greater than zero, and as stated in HRS Section 4.1.2.1.1, *Observed release* (in the surface water pathway), an observed release has been demonstrated when the “analysis of surface water, benthic, or sediment samples indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site for that type of sample.” Therefore, the HRS documentation record at proposal correctly used sediment samples to establish an observed release for this site.

1.1.3.9 Sampling Strategy

The Carus Chemical Company contended that the sampling data contained in the HRS documentation record at proposal “is not representative of site conditions.” It commented that because the analytical data used in the HRS documentation record at proposal was “limited and outdated,” it introduced “substantial uncertainty regarding the validity of both the approach and the resulting ability to adequately characterize the site.” It asserted that the site “has been better characterized than a few 8 year-old samples would suggest.”

In response, the data used in the HRS scoring of this site meet all HRS requirements. HRS Section 4.1.2.1.1, *Observed release*, states that an observed release has been established “by demonstrating that the site **has** (emphasis added) released a hazardous substance to the surface water in the watershed.” The HRS does not require that the release be continual. Also, the HRS does not contain a requirement concerning the number of samples to be used or that the analytical data used to score a site must be

collected within a particular time frame. The sampling performed to obtain an HRS score is limited in scope, while more detailed sampling is conducted at the RI/FS stage. The sampling that was conducted as part of the CERCLA Screening Site Inspection and the CERCLA Integrated Site Assessment are consistent with general guidance as stated on page 58 of the HRS Guidance Manual, “[b]ackground and release samples must be from the same medium (e.g., soil, water, tissue) and should be as similar as possible. Similar sampling methods should be used to obtain background and release samples.” The Carus Chemical Company presented no information that demonstrated the data were inadequate, improperly analyzed, or inaccurate. EPA contends that the site is adequately characterized by the data presented in the HRS documentation record as proposed.

Furthermore, the Carus Chemical Company Phase II Site Investigation conducted in the Fall of 1994 by GeoSyntec contained sampling from the areas around Source 1 and south of it including sediments from the Little Vermilion River. Although these samples were collected in November of 1994 and some of the samples used to establish an observed release in the HRS documentation record at proposal were collected as late as December of 1993, the results from the 1994 samples were consistent with the 1993 samples. Elevated levels of cadmium, lead, and zinc were detected in the soil and sediment samples collected in the Phase II study area.

1.1.3.10 Source 1 - Description & Delineation

The Carus Chemical Company asserted that the sampling data used to characterize source 1 was based on “three samples of slag material collected in 1993,” and the “area of this source was estimated on the basis of an aerial photograph from 1988.” The Carus Chemical Company asserted that source 1 is located in part on the Carus Chemical Company property and that the company “has been proactive in assessing the nature of this waste material and characterizing heterogeneities that appear to relate to the specific subareas and materials deposited at specific times.” It stated that the assumption made by using the three samples to characterize the source is that the source is “homogeneous, unchanging, and readily characterized as a single source spanning approximately 6 acres of property owned by different parties.” The Carus Chemical Company asserted that this characterization of this source is an oversimplification of “an obviously complex potential waste source” and that this “strains the credibility of the scoring process.” It commented that the HRS scoring process “clearly makes room for characterization on the basis of extremely limited data where necessary,” but this process “requires that readily available information pertinent to understanding the characteristics of a site (such as waste heterogeneities) be considered.”

The Carus Chemical Company stated that the data used to score source 1 “clearly does not represent the overall information base that is available and relying on such limited information suggests that insufficient effort was made in the scoring to adequately characterize the source.” An example of this problem is demonstrated in “the IEPA’s failure to include in their narrative description of Source 1 . . . the specific high-temperature treatment process from which M&H generated slag material.” The Carus Chemical Company indicated that this process “specifically results in metals forms that are highly resistant to further leaching” and that “[t]his characteristic of the waste is relevant to a proper understanding of its potential migration.” It commented that soil samples collected by IEPA “containing material fused at high temperatures (clinker and smelter residues) were analyzed by destructive testing (a method which would include non-leachable metallic elements as well as leachable metallic elements) to determine the quantity of metallic elements present.”

Mr. Carus and Ms. Carus stated that the statement, from Section 2.2 of the HRS documentation record at proposal, “[s]amples of wastepile material collected during the CERCLA. [Integrated Assessment document the presence of] . . . cadmium, copper, chromium, lead, nickel and zinc” is not accurate in that “[w]e do not think the chromium, copper and nickel came from this site as they are not part of the process or commonly found in zinc deposits.” They indicated that these metals could have “migrated from upstream activities.” Mr. Carus and Ms. Carus also commented that the wastepile (source 1) “is compacted and stable since there are not copious amount of clinker and smelter residue at [the] mouth of the Little Vermilion River.”

Mr. Carus and Ms. Carus asserted that the hazardous waste quantity factor values for sources 1 and 2 (19,983 and 51,126, respectively) are not accurate because “[n]ot all the material should be considered hazardous waste.” They indicated that it is important to note that the M & H facility is located “on the energy source of two coal mines” and the facility was in operation for 103 years. “The coal mine shale and clay along with clinker and smelter residue was continuously placed on the site filling in ravines to the river and changing the elevation significantly.”

In response, EPA adequately characterized source 1 for HRS purposes. It is not necessary, nor did the Agency assume that the source is “homogeneous or unchanging.” This level of information is obtained during the RI/FS phase rather than this preliminary listing phase. As is discussed below, pages 7 - 11 of the HRS documentation record at proposal showed that source 1 contained hazardous substances that were available to migrate from the source due to the fact that the containment factor value for source 1 was greater than zero (see Table 4-2 of the HRS).

In addition, HRS Section 2.2.1, *Identify sources*, states that for the three migration pathways, “identify the sources at the site that contain hazardous substances.” There is no requirement specified on the number of samples required to determine the hazardous substances present at a source. Moreover, sampling is only one way in which to identify hazardous substances associated with a source. HRS Section 2.2.2, *Identify hazardous substances associated with a source*, states that for the three migration pathways, “consider those hazardous substances documented in a source (for example, by sampling, labels, manifests, oral or written statements) to be associated with that source when evaluating each pathway.” HRS Section 2.2.3, *Identify hazardous substances available to a pathway*, states that when evaluating the surface water migration pathway the hazardous substances that are available to migrate from the sources at a site include all hazardous substances that meet the criteria for observed release to surface water in the watershed being evaluated and all hazardous substances associated with a source with a surface water containment factor greater than 0 for the watershed. Furthermore, given the way the HRS is structured, a more complex characterization of a source would result in an increase in the site score due to the increase in hazardous waste quantity. More extensive sampling would not undercut what was detected in the samples used to characterize the source, in fact, it would result in a higher site score.

Source Samples

With regard to the number of samples used to characterize the source, the HRS does not contain a requirement concerning the number of samples to be used or that the analytical data used to score a site must be collected within a particular time frame. It specifies that sampling is one way to determine the hazardous substances present at a source. As stated above, HRS Section 2.2.2, *Identify hazardous substances associated with a source*, states that for the three migration pathways, “consider those hazardous substances documented in a source (for example, by sampling, labels, manifests, oral or written statements) to be associated with that source when evaluating each pathway.”

With regard to the comments that the site narrative did not include a discussion about the high-temperature treatment process from which the slag material was generated and the resulting complex metals that are resistant to leaching, EPA described the source in the HRS documentation record at proposal using the information readily available. In addition, this statement does not impact the source evaluation. It does not demonstrate that the source does not contain hazardous substances or that the source HRS containment is zero. The statement that the resulting complex metals were then subject to “destructive testing” is misleading. The source samples were analyzed by standard EPA analytical methods for the analysis of waste samples which determine the hazardous substance that were present in that sample. These analytical procedures are not a test for containment. The issue regarding non-leachable metals and leachable metals is beyond the scope of the sampling for a documentation record. EPA test method 1311, Toxicity Characteristic Leaching Procedure (TCLP), is a test to determine leachability and is designed to stimulate the climatic leaching action expected to occur at landfills. It identifies and quantifies 8 metals and 25 organic compounds (pesticides, herbicides, etc.) with the potential to leach into ground water. It is used by hazardous waste generators to characterize waste prior to disposal. This method is not used to characterize a source for HRS scoring. The HRS is a screening tool and bioavailability of metals is not addressed at this stage of the Superfund process. It is addressed at during the site-specific risk assessment process. Furthermore, the commenter did not submit data to support the assertion that the slag pile contained non-leachable metals. These comments have no affect on the site score.

Source Location/Waste Quantity

With regard to the commenters concern about the amount of hazardous waste in Source 1, the Agency addressed the issue of high volume, low concentration waste when it revised the HRS in 1990 (55 FR December 14, 1990). As discussed in the preamble to the proposed rule (53 FR 51972 - 51973, December 23, 1988), the Agency developed a tiered system of determining the hazardous waste quantity to better reflect the amount of hazardous substances in the waste. The Agency recognizes that, at some sites, sufficient data may be available to determine the concentration of hazardous constituents and the HRS directs the Agency to use these data where they are available. At most sites, however, obtaining these data would be difficult and costly.

A tiered system for evaluating hazardous waste quantity was designed to encourage the use of concentration data while providing the flexibility to use indirect estimates of a constituent's mass when sufficient concentration data are unavailable. The tiered approach involves the development of a waste quantity factor value based, in order of preference, on three methods of hazardous substance quantity estimation:

- hazardous constituent quantity, Tier A;
- site wastestream quantity, Tier B; and
- site disposal capacity, Tiers C, Volume and D, Area.

When data to support the actual quantity of hazardous substances deposited on site are complete and accurate, the hazardous constituent quantity, Tier A, provides the most accurate determination of the quantity of hazardous substances at the site. Formula were developed for Tiers B, C and D to provide a consistent means of evaluating the amount of hazardous substance present when constituent data are incomplete or unavailable (see the "The Superfund Hazard Ranking System (HRS): Feasibility of Using Concentration Data in a Revised HRS" ICF, Inc. July 1987). These formula were developed, based on a nationwide study, to reflect typical concentrations of hazardous substances found in different source types.

The Agency also notes while the amount of hazardous substances released from low concentration, high volume sources may be less than that released from high concentration sources, given that many health and environmental risks are associated with low concentrations, these releases may still pose a significant threat. Because the HRS provides for consistent evaluation of hazardous waste quantity and because low concentration wastes can pose a risk to human health and the environment, the Agency's position is that the HRS is an appropriate model for evaluating sites with a large quantity of a mixture containing relatively small quantities of hazardous constituents.

The tier designation is the way that the HRS estimates the hazardous waste quantity factor in the HRS score. The hazardous waste quantity factor allows the use of various measures of hazardous waste quantity depending on data availability and adequacy. Tier D is used when data on the surface area of the base of a source are available. Tier D is used for source types without reasonably well-defined vertical boundaries such is the case for Source 1. At the M & H Zinc site, the evaluation of waste quantity was based on Tier D, Area.

With regard to the use of aerial photographs to document the area of a source, EPA uses available data to estimate the area. This available information includes, but is not limited to, aerial photographs (showing the waste) with accurate scales, exact source sampling locations, and descriptions of the waste as seen during the site inspection. According to page 9, Section 2.4.1, of the HRS documentation record at proposal for Source 1, the source samples did not contain soil, but contained a coarse, black, coal-like material. This process is consistent with general guidance as described on page 109 of the HRS Guidance Manual which states that “[a]erial photographs, especially historical photographs, are particularly helpful in evaluating this tier [Tier D - Area].” Therefore, EPA used an acceptable method of estimating the area of source 1.

Associated Hazardous Substances

With regards to the commenters concern about the statement from pages 7-11 of the HRS documentation record at proposal regarding the eligibility of several metals in Source 1 for consideration, EPA appropriately associated these hazardous substances with Source 1. As stated in HRS Section 2.2.3, *Identify hazardous substances available to a pathway*, states that “[a]ll hazardous substances associated with a source with a surface water containment factor value greater than 0” are available to migrate from the sources at the site to the pathway. Section 2.4.1 of the HRS documentation record at proposal (page 9) states that waste samples X104, X105, and X106 contained cadmium, copper, chromium, lead, nickel, and zinc. The fact that chromium, copper and nickel are not commonly found in zinc deposits and that “there are not copious amount of clinker and smelter residue at [the] mouth of the Little Vermilion River” does not negate the fact that chromium, nickel and copper were detected in slag samples collected from Source 1, were detected at elevated levels (43.3 mg/Kg, 118 mg/Kg, and 4340 mg/Kg, respectively), and were available to migrate from the source. Therefore, no changes were made to the HRS documentation record as proposed.

Containment

With regard to the stability of the waste pile, EPA assumes the commenter is questioning the containment of source 1. According to Table 4-2 of the HRS, a waste pile that does not have a complete, maintained, engineered cover or a functioning and maintained run-on control system and runoff management system receives a value of 10 for containment. Therefore, for HRS purposes, runoff from the wastepile flows into the Little Vermilion River, which lies directly to the east of the wastepile. In addition, the commenter did not provide documentation that the waste pile is compacted and stable. Therefore, no changes have been made to the HRS documentation record as proposed.

1.1.3.11 Source 2 - Description & Delineation

The Carus Chemical Company commented that “Source 2 was scored on the basis of five samples from 1993, also identified as waste materials.” It asserted that the area of this source was “identified with an even older aerial photograph.” This source “is not located on property owned by Carus Chemical Company,” but the Carus Chemical Company “understands that this portion of the M & H Zinc Company property has also been more thoroughly investigated than the use of 5 samples would suggest.” The Carus Chemical Company asserted that source 2 “should have been evaluated more thoroughly, consistent with the readily available information about the potential source area.” Mr. Carus and Ms. Carus asserted that the hazardous waste quantity factor values for sources 1 and 2 (19,983 and 51,126, respectively) are not accurate because “[n]ot all the material should be considered hazardous waste.”

In response, as explained for source 1, EPA adequately characterized source 2 for HRS purposes. The HRS does not require that the hazardous substances associated with a source be documented with chemical data. It specifies that sampling is one way to determine the hazardous substances present at a source. As stated above, HRS Section 2.2.2, *Identify hazardous substances associated with a source*, states that for the three migration pathways, “consider those hazardous substances documented in a source (for example, by sampling, labels, manifests, oral or written statements) to be associated with that source when evaluating each pathway.” Pages 12-16 of the HRS documentation record at proposal showed that source 2 contained hazardous substances that were available to migrate from the source due to the fact that the containment factor value for source 2 was greater than zero (see Table 4-2 of the HRS).

In addition, as explained in Section 1.1.3.10 above, a source can be scored based on a single sample if that sample demonstrates that the source contains a hazardous substance. Therefore, the five samples used to score source 2 more than meets the minimum requirement. As stated above, the HRS does not contain a requirement concerning the number of samples to be used or that the analytical data used to score a site must be collected within a particular time frame.

With regard to the commenters concern about the amount of hazardous waste in Source 2, as stated above, the Agency developed a tiered system of determining the hazardous waste quantity to better reflect the amount of hazardous substances in the waste. The Agency recognizes that, at some sites, sufficient data may be available to determine the concentration of hazardous constituents and the HRS directs the Agency to use these data where they are available. Tier D is used when data on the surface area of the base of a source are available. Tier D is used for source types without reasonably well-defined vertical boundaries such is the case for Source 2. At the M & H Zinc site, the evaluation of waste quantity was based on Tier D, Area.

With regard to the use of aerial photographs to document the area of a source, EPA uses available data to estimate the area. This available information includes, but is not limited to, aerial photographs (showing the waste) with accurate scales, exact source sampling locations, and descriptions of the waste as seen during the site inspection. As stated above for Source 1, this process is consistent with general guidance which states that aerial photos are helpful in evaluating the area of a source (HRS Guidance Manual, p. 109).

1.1.3.12 Observed Release/Direct Observation

Mr. Carus and Ms. Carus objected to the statement that the metals detected in the two sources have migrated into the Little Vermilion River, which lies just east of Source 1. They stated that this statement was inaccurate, and that it should state that the “IEPA did find fused clinker and smelter residues rather than migrated run off.”

In response, the sediment samples collected from the Little Vermilion River as well as the source samples (X104, X105, and X106) that were collected from the waste pile all contained the same hazardous substances at elevated concentrations. As stated in Section 4.1.2.1.1, Observed Release, of the HRS documentation record at proposal, a 1988 aerial photograph and photographs taken during the 1991 Screening Site Inspection at Carus Chemical Company (Reference 4 of the HRS documentation record at proposal) and the 1993 Integrated Assessment at M & H Zinc (Reference 3 of the HRS documentation record at proposal) provide documentation that the waste pile has been in contact with the Little Vermilion River since at least 1988. In addition, it has been observed that a portion of this slag is now located in the Little Vermilion River. Therefore, since the same hazardous substances that were detected in the slag samples and the sediment samples, and the fact that the slag pile is in direct contact with the Little Vermilion River, the hazardous substances have migrated from the source and a release to the surface water pathway is documented. The commenters did not provide documentation to support their statement. Therefore, no change was made to the HRS documentation record as proposed.

1.1.3.13 Attribution of Contamination to the Site

Mr. Carus and Ms. Carus said that the statement “[m]any of these [residential soil samples] were found to contain elevated levels of metals which are associated with the site” on the cover sheet of the HRS documentation record at proposal was incorrect. They indicated that this statement is an assumption because there are “at least three zinc smelters and three coal mines in the La Salle-Peru, Illinois [area]” and that “background levels could be from all these sites.” These facilities include Illinois Zinc (located on Brunner Street with Number Nine coal mine), a zinc smelter (located in south east La Salle between third and fourth streets west of Union Street), and “Matthiessen & Hegeler smelter and coal mine east of ninth street plus the Old Kentucky Coal mine east of the Illinois Central Railroad track on the M & H site.”

Mr. Carus and Ms. Carus commented that the “chromium, copper and nickel found in the sediment samples in the Little Vermilion River” is not attributable to this site. Their opinion is that “they come from an upstream activity.” Mr. Carus and Ms. Carus asserted “that the metallic analysis of upstream samples are impacted by other sources of manufacturing and mining activity.”

Mr. Carus and Ms. Carus claimed that the statement “[t]here are not other known sources of metals located upstream of or along side of the Matthiessen & Hegeler property” is not accurate. They asserted that the “Apollo Metal Works, a plating manufacturer, had a facility directly north and upstream of the M & H site.”

In response, EPA appropriately attributed the release of hazardous substances in the Little Vermilion River, at least in part, to the M & H Zinc site. With regard to the commenters concern about the residential samples collected during the CERCLA Integrated Site Assessment, thirteen soil samples were

collected on residential property in the area of the site. These samples contained cadmium, copper, lead, and zinc along with other metal analytes. As stated in Section 1.1.3.7 of this support document, the soil exposure pathway was not scored even though soil samples were collected from nearby residences. Thus, the possibility that this soil contamination came from other possible sources is irrelevant to the listing of this site. A subsequent stage of the Superfund process, the RI/FS, characterizes conditions and hazards at the site more comprehensively.

With regard to the commenters concern about attribution of sediment contamination, EPA correctly attributed at least part of the cadmium, copper, lead, nickel and zinc contamination detected in sediment release samples X201, X202, and X203 in the 1991 sampling event, and X202, X203, and X204 in the 1993 sampling event to the site. Significantly lower concentrations of these metals were detected in the background samples X201 and X205 during the 1993 sampling events, and X208 during the 1991 sampling event. HRS Section 2.3, *Likelihood of release*, states that “[t]he minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level. Further, some portion of the release must be attributable to the site” (emphasis added). Thus, the HRS does not require that attribution be exclusive with respect to the site in general. In this case, the direct observation of the waste material from this site in the Little Vermilion River establishes that at least part of the contamination in the river came from the site.

In addition, EPA acknowledges that upstream activities may be contributing to the contamination of the Little Vermilion River. If this is the case, it will be identified during the RI/FS when the conditions and hazards at the site are more comprehensively characterized. However, for HRS purposes, background samples are used to establish a background level which is the concentration of a hazardous substance that provides a defensible reference point that can be used to evaluate whether or not a release from the site has occurred. As stated in the HRS documentation record at proposal, pages 19 - 25, the background samples (X201, X205 and X208) were collected upstream of the majority of the area of influence of the smelting operations at the M & H Zinc site. Samples X205 (located at the bend in the river located at the northeast corner of the site) and X208 (located north of the Carus Chemical Company) were also collected downstream of any other known source of the hazardous substances in the release, including the Apollo Metal Works facility. Sample X201 was collected upstream of any known hazardous substances in the release as well as upstream of the Apollo Metal Work Facility. It was collected approximately one and a half miles north of the M & H property and north of the bridge at the Edward Duffy Road.

Background sample X201 contained copper (5.5 mg/Kg), lead (6.9 mg/Kg), nickel (5.6 mg/Kg), and zinc (48.2 mg/Kg). Background sample X205 contained cadmium (2.6 mg/Kg), copper (16.4 mg/Kg), lead (15.4 mg/Kg), nickel (25.3 mg/Kg), and zinc (150 mg/Kg). Background sample X208 cadmium (1.3 mg/Kg), copper (7.7 mg/Kg), lead (7.6 mg/Kg), nickel (7.4 mg/Kg), and zinc (60.2 mg/Kg). Any activity upstream of the background sample locations would have impacted the background sample concentrations at the site. That observed release samples X201, X202, X203, and X204 all contain hazardous substances at concentrations greater than three times those in the background samples demonstrates that at least some of the contamination in these samples is the result of releases from the M & H Zinc. In fact, the observed release samples contained cadmium (from 15.3 mg/Kg to 46.5 mg/Kg), copper (from 102 mg/Kg - 186 mg/Kg), lead (from 164 mg/Kg - 1050 mg/Kg), nickel (85.4 mg/Kg), and zinc (from 1570 mg/Kg - 12,100 mg/Kg).

Based on the above response to comments, no changes were made to the HRS documentation record as proposed.

1.1.3.14 Waste Characteristics - Toxicity Value of Cadmium

The Carus Chemical Company commented that the Illinois EPA attained a site score of 50.0 for this site based on the toxicity value of cadmium. It submitted detailed technical comments prepared by GeoSyntec Consultants that indicate that the “Illinois EPA selected the wrong toxicity factor for cadmium.” The Carus Chemical Company asserted that:

[t]he toxicity factor used in the Documentation Record corresponds to potential risk from *inhalation* of cadmium. For the human food chain calculation used to score the surface water pathway, however, a toxicity factor for cadmium in *food* should have been used. There has been a tremendous amount of scientific study on the effects of cadmium, and the results show unequivocally that cadmium might be carcinogenic through inhalation, but *not* through ingestion. Because the toxicity factor assigned to cadmium for inhalation is so much greater than that for ingestion (*i.e.*, 10,000 percent greater), the effect that this error has on the overall HRS score for the Site is enormous.

The Carus Chemical Company concluded that the site score is dependent on the toxicity value for cadmium and that, when the “correct toxicity factor is applied, however, the toxicity/persistence/bioaccumulation factor value for cadmium is equivalent to that for lead.” It contended that the overall site score should be 27.0 for the M & H Zinc site.

The Carus Chemical Company stated that the HRS calculations are complex and “the correct assignment of values in the scoring package is critical to the integrity of the process.” It commented that, “in *National Gypsum Co.*, *supra*, 968 F.2d at 43-44, EPA was found to act arbitrarily in assessing the toxicity and persistence scores for a site, and reversed the decision to list the site on the NPL.” In addition, “in *Tex Tin*, *supra*, 935 F.2d at 1323, EPA’s toxicity score was successfully challenged, and the site was ultimately removed from the NPL. See *Tex Tin Corp. v. EPA*, 992 F.2d 353 (D.C. Cir. 1993).” It contended that “there would be no reasonable explanation that could be offered for assigning cadmium’s ‘inhalation’ toxicity factor for purposes of the surface water/human food chain calculation.”

The Carus Chemical Company asserted that the HRS scoring process “incorporates an element that is intended to account for the potency of hazardous chemicals that are scored in each pathway.” It stated that Table 2-4 of the HRS provides a scoring factor based on the “numerical values of standardized non-cancer and cancer toxicity values assigned by USEPA, typically listed in the Integrated Risk Information System (IRIS) database.”

The Carus Chemical Company contended that the site score was calculated incorrectly because the toxicity value for cadmium in the surface water pathway is not applicable for this pathway. The toxicity value for cadmium, 10,000, corresponds to the toxicity value for inhalation cancer risk. It asserted that the value specifically identified in IRIS for cadmium in food should have been used. The Carus Chemical Company stated that a toxicity value of 100 should have been assigned.

The Carus Chemical Company commented that the risks via the food chain are “not realized through inhalation exposure; therefore, the inhalation-based cancer slope factor (CSF) is inappropriate for cadmium exposure through food.” IRIS lists a different toxicity value for cadmium in food because the toxicity of cadmium is well understood to have “differential toxicity depending on whether the exposure occurs through ingestion versus inhalation routes.” The Carus Chemical Company asserted that

cadmium is “commonly the archetypal example of such route-dependent toxicity cited in toxicology textbooks.”

The Carus Chemical Company commented that cadmium has a route-specific toxicity “because it has been shown to be carcinogenic through one particular route of exposure (inhalation), but noncarcinogenic through other routes of exposure (ingestion and dermal).” It asserted that epidemiological studies have reported that “occupational exposures to cadmium fumes and dusts via inhalation can be associated with increased incidences of lung cancers.” The Carus Chemical Company stated that “the International Agency for Research on Cancer (IARC) [1993] agreed that although the carcinogenicity in humans of cadmium is supported via inhalation, the evidence for establishing cadmium as a carcinogen through other exposure routes is unfounded.”

The Carus Chemical Company stated that “[o]ral exposures to cadmium compounds have not found any associations with intake and increased cancer rates.” The endpoints for these studies included lung cancer, prostate cancer, kidney cancer and urinary tract cancer. “Although renal diseases have been associated with increases in cadmium intake, after a study specifically detailing cadmium exposure, cadmium tissue levels, and renal cell carcinoma, researchers concluded cadmium was not a risk factor.”

The Carus Chemical Company asserted that the differences in cadmium carcinogenicity between exposure routes is dependent on differences in absorption, and the localized effect of cadmium on the lungs. Cadmium is absorbed more readily into the body through the inhalation pathway than through the ingestion pathway. The Carus Chemical Company commented that the “difference in absorption yields a lower body burden of cadmium when the primary route of exposure is ingestion.”

The Carus Chemical Company stated in summary that cadmium has an IRIS-specified oral reference dose (R_d) for food ingestion. It claims that EPA and ATSDR agree that the “toxicity values based on cadmium carcinogenic potential following inhalation exposure are only relevant for that particular route of exposure.” The Carus Chemical Company asserted that the “cadmium oral R_d for food ingestion should have been used to determine the Toxicity Factor Value in the Human Food Chain Threat scoring, with a resultant value of 100 being assigned instead of the proposed 10,000.” The Carus Chemical Company provided in its comment letter a complete recalculation of the site score using the toxicity value of 100 for cadmium. The Carus Chemical Company asserted that the site score should be 27 not 50 as stated in the HRS documentation record at proposal.

In response, EPA assigned a toxicity/persistence/bioaccumulation factor value in the manner required by the HRS. The method for obtaining the HRS human toxicity factor value for a hazardous substance for all HRS pathways is provided in HRS Section 2.4.1.1, *Toxicity factor*. It states that “[f]or hazardous substances having usable toxicity data for multiple exposure routes (for example, inhalation and ingestion), consider all exposure routes and use the highest assigned value, regardless of exposure route, as the toxicity factor value.”

If the commenter’s concerns are over the technical soundness of the HRS toxicity evaluation method, then this comment is untimely (see *RSR Corporation v. U.S. Environmental Protection Agency*, 102 F.3d 1266 (D.C. Cir., 1997), see also *Eagle-Picher v. EPA*, 759 F.2d 922, (D.C. Circuit, 1985)). The HRS was promulgated on December 14, 1990, in a separate notice-and-comment rulemaking. The HRS is a final rule and thus is binding on EPA. Moreover, contrary to the commenter assertions, it is not within EPA’s discretion to change the scoring provisions of the HRS as site-specific conditions might suggest. While it is true that EPA must “examine [the] relevant data and . . . articulate a rational explanation for

its action” (*Eagle-Picher Indus., Inc. v. EPA*, 759 F.2d 905, 921 (D.C. Cir. 1985)), the scope of relevant data is limited by the data requirements of the HRS factor evaluation methods. EPA does not have discretion to deviate from the HRS. The HRS was adopted in its final version on December 14, 1990 (55 FR 51532).

The HRS, as a screening tool, reflects several simplifying assumptions necessary to “provide an expeditious and relatively inexpensive initial determination of which sites may warrant further action under CERCLA” (*Eagle-Picher I*, 759 F.2d at 909). As indicated in the Preamble to the final rule revising the HRS (55 FR 51532, 51543 through 51546, December 14, 1990), EPA considered several different methods for assessing toxicity during the HRS revision process. The method finally selected represented the best tradeoff between the needs for technical accuracy and simplicity. The assumption that metals are present at a site in their most toxic form has a corollary in the HRS use of the single most toxic substance to score the toxicity rating factor. The Agency addressed this issue in the preamble to the HRS final rule:

[t]he Agency agrees that, for purposes of accurately assessing the risk to human health and the environment posed by a site, it would be preferable to evaluate the overall toxicity by considering all hazardous substances present, based on some type of dose- (or concentration-) weighted toxicity approach. EPA believes, however, that this approach is not feasible because the data requirements would be excessive. Such an approach would be feasible only when relative exposure levels of multiple substances are known or can reasonably be estimated; however, these data can be obtained only by conducting a comprehensive risk assessment. (55 FR 51543, December 14, 1990)

Furthermore, it is not necessarily the case that surface water use is restricted to oral exposure. EPA recognizes that the toxicity of substances is route-specific; that is, the toxicity of a chemical varies with the route it is introduced to the body. However, the three HRS migration pathways (i.e., ground water, surface water, and air) receiving a toxicity factor value are substance migration pathways, not human exposure routes. Multiple human exposure routes are possible for each substance migration pathway (e.g., volatile substances in ground water or surface water used as potable water can be inhaled during showering), and therefore, use of a single route-specific toxicity value for each HRS pathway is not necessarily appropriate.

1.1.3.15 Documentation Issues

Mr. Carus and Ms. Carus submitted several comments questioning the accuracy of the information contained in the Site Summary/Narrative Summary section of the HRS documentation record at proposal. Mr. Carus and Ms. Carus asserted that the facility stopped smelting zinc forty years ago in 1961 rather than 1968.

In response, according to Reference 3 of the HRS documentation record at proposal, CERCLA Integrated Site Assessment Report, the M&H Zinc Company “quit mining coal onsite in 1937 and in 1961 stopped smelting zinc.” Therefore, the HRS documentation record as proposed has been changed to reflect the 1961 date.

Mr. Carus and Ms. Carus objected to the statement that the fence surrounding the site contains holes. They indicated that “[a]t this time we are not aware of holes in the surrounding fences.”

In response, during the reconnaissance visit on November 12, 1993, it was noted in the field log that the fence did contain holes and that access to the property could be gained. The commenters did not provide documentation that the holes in the fence are not present or that they have been repaired. In addition, since the site was scored based on the surface water pathway, this comment has no impact to the site score. Fencing does not prevent overland flood migration of contamination from a source. Therefore, no changes were made to the HRS documentation record as proposed.

1.1.3.16 Adequacy of the HRS Documentation Record

Mr. Carus and Ms. Carus commented that the Matthiessen & Hegeler Zinc Company site should not be placed on the NPL. The Carus Chemical Company commented that listing the M & H Zinc site on the NPL “would contradict EPA protocol” and “would fail to serve the public interest.” It commented that listing this site on the NPL “based on the existing [HRS] Documentation Record would constitute an abuse of discretion, and arbitrary and capricious action on the part of EPA.”

The Carus Chemical Company commented that in 1980 Congress established a clear purpose of the NPL (S. Rep. No.848, 96th Cong., 2d Sess. 60 (1980)). It continued that in 1986, Congress amended Section 105 of CERCLA “to require that EPA revise its method of selecting NPL sites.” The Carus Chemical Company concluded that because of these laws, “[i]t is therefore critical to the entire process that the procedures and guidelines by which sites are selected for the NPL are followed and implemented correctly.” It asserted that:

[e]rrors by the Illinois EPA in following applicable HRS protocol contravene Congressional directives and applicable case law. The errors in the Documentation Record also contradict EPA’s stated purpose of the NPL as an informational management tool, intended primarily to guide EPA in determining which sites warrant further investigation, to assess the nature and extent of the public health and environmental risks associated with the site, and to determine what CERCLA-financed remedial action, if any, might be appropriate. See, *e.g.*, 55 Fed. Reg. 6154, 6155 (Feb. 21, 1990).

The Carus Chemical Company stated that proposal of this site to the NPL “must be justified by the Documentation Record that EPA has assembled” and that the HRS documentation record at proposal must “provide a reasoned and cogent explanation for EPA’s decision to list a site on the NPL. See *Motor Vehicle Mfrs. Assn. v. State Farm Mutual Auto Ins. Co.*, 463 U.S. 29, 48 (1983)” It also contended that “EPA must provide reasonable explanations for its conclusions that certain sources are likely to release a given contaminant via a certain pathway. *Tex Tin Corp. v. EPA*, 935 F.2d 1321 (D.C. Cir. 1991).” The Carus Chemical Company concluded that the HRS documentation record at proposal must contain a justification not “based upon inaccurate or misleading information, unsupported assumptions or inadequate data. See *National Gypsum Co. v. EPA*, 968 F.2d 40, 44 (D.C. Cir. 1992).”

In response, EPA has met all the Administrative Procedure Act (APA) requirements and the HRS documentation record at proposal accurately provides the rationale for the HRS scoring of the site. EPA

disagrees with the Carus Chemical Company that listing the M & H Zinc site on the NPL “would contradict EPA protocol” and “would fail to serve the public interest.”

EPA also disagrees with the Carus Chemical Company that EPA is acting arbitrarily in listing the M & H Zinc site. The HRS documentation record at proposal for this site provides “a reasoned and cogent explanation for EPA’s decision to list a site on the NPL.” The HRS documentation record was prepared in a manner consistent with applicable CERCLA regulations and policy and in accordance with the HRS, which in itself meets the guidelines set forth in CERCLA for identifying and listing hazardous waste sites on the NPL. Further, as discussed in this support document, no commenters have identified any actual errors in this rationale.

EPA is listing this site because there is evidence of releases that have threatened human health and the environment, not just because it scores technically. Page 19 of the HRS documentation record at proposal states that a 1988 aerial photograph, photographs taken during the 1991 Screening Site Inspection and the 1993 Integrated Assessment all provide documentation that hazardous substances (cadmium, copper, lead, nickel, and zinc) have been in contact with the Little Vermilion River at least since 1988. The Little Vermilion River is a fishery as documented in the Illinois Department of Natural Resources booklet entitled “Illinois Fishing Guide” (see Reference 14, page 36 of the HRS documentation record at proposal) and contains multiple hazardous substances that are toxic and bioaccumulate in human food chain organisms. Section 4.1.3.3 of the HRS documentation record at proposal indicates that Illinois EPA personnel, on two separate occasions, documented the presence of fishing gear along the bank of the Little Vermilion River downstream of the former Matthiessen and Hegeler property, indicating that the river is used as a fishery. Therefore, listing this site on the NPL is reasonable.

1.1.4 Conclusion

The original score for the M & H Zinc site was 50.00. Based on the above response to comments, the site score remains unchanged. The final score for the M & H Zinc site is:

Ground Water	Not Scored
Surface Water	100
Soil Exposure	Not Scored
Air Pathway	Not Scored
HRS Site Score	50.00

1.2 Lammers Barrel, Beavercreek, OH

1.2.1 List of Commenters/Correspondents

SFUND-2002-0001-0089	Comment dated November 3, 2002 from William M. Golla, P.E., Jack Kratzmeyer, and Evan Nyer, V.P. of ARCADIS G&M, Inc., Chicago, Illinois, on behalf of Lammers Barrel Site Group
SFUND-2002-0001-0082	Correspondence dated September 3, 2001 from the Honorable Bob Taft, Governor, State of Ohio

1.2.2 Site Summary

The Lammers Barrel property, located in Beavercreek, Ohio, is approximately two acres in size. Now a vacant lot, it is bisected west to east by Little Beaver Creek. The property is bordered to the west and south by Grange Hall Road and East Patterson Road, respectively. An abandoned railroad right of way makes up the northern border, and a parking lot and undeveloped area lie immediately to the east.

Operations began at Lammers Barrel Factory in 1953 and continued until October 1969 when the facility experienced a fire that completely destroyed the buildings. According to former employees, the facility bought, sold, and reclaimed all types of solvents. During operations, the facility had an above-ground storage capacity of over 500,000 gallons. This consisted of eighteen vertical tanks, ranging in size from 2,500 to 25,000 gallons, and approximately 6,000 55-gallon drums.

The HRS site score is based on one source, contaminated soil, which is believed to have resulted both from normal facility operations and from damage to drums and tanks during the 1969 fire, and the migration of contamination via ground water and surface water to targets. The source, which lies on both sides of Little Beaver Creek, is conservatively estimated to be approximately 52,245 square feet in size based solely on contaminant concentrations that exceed remedial action goals. Contaminants detected in soils include volatile organic compounds (VOCs), such as trichloroethene, benzenes, and xylenes; semi-volatile organic compounds (SVOCs), such as naphthalene and phenanthrene; and polychlorinated biphenyls (PCBs). At some sample locations, VOC concentrations have exceeded 3,000,000 parts per billion (ppb).

Ground water in the site vicinity is contaminated with VOCs at concentrations up to 62,000 ppb. In 1985, well samples collected throughout Beavercreek identified an area of ground water contamination along the northern end of the Valleywood subdivision, located southeast of the facility. Sampling revealed the presence of vinyl chloride at levels above the Federal maximum contaminant level (MCL) for drinking water in some wells. Periodic ground water sampling since 1985 show that the contaminated ground water plume has advanced into the Valleywood subdivision, resulting in the extension of the county water line or the installation of filtration systems at several homes. VOCs, such as chloroethane, 1,2-dichloroethene, perchloroethylene, and trichloroethylene, have been documented in a total of 19 residential wells. VOC levels in ten of the wells exceed MCLs and are scored as subject to Level I concentrations; five of these wells, including the nearest well, have been abandoned due to the contamination. VOCs were present in nine wells at levels below MCLs and are considered subject to

Level II concentrations. Ground water contamination threatens an additional 82 public drinking water wells within 4 miles of the Lammers Barrel facility.

Surface water also is contaminated at the site. Sediment samples collected from Little Beaver Creek identified the presence of VOCs and SVOCs. Contaminant concentrations in sediments range from an estimated 450 ppb phenanthrene to 97,000 ppb xylenes. Approximately 3.4 miles from the Lammers Barrel property, Little Beaver Creek flows into Beaver Creek, which continues another 1.1 mile to its confluence with the Little Miami River, a National and State Scenic River, and a popular recreation and wildlife area. Possible targets along the river in the vicinity of the site include a human food chain fishery, wetlands, and a state threatened species.

1.2.3 Summary of Comments/Correspondence

William M. Golla, P.E., Jack Kratzmeyer, and Evan Nyer, V.P. of ARCADIS G&M, Inc., submitted comments on behalf of the Lammers Barrel Site Group, hereafter referred to as the Site Group. The Site Group opposed the site listing, claiming that the site score of 69.33 is not supported by the information contained in the HRS Docket¹. It asserted that EPA relied on inaccurate, incomplete, and outdated information and unreliable or inaccurate assumptions, which have resulted in an inflated HRS score. It claimed that the hazardous waste quantity was arbitrarily assigned a default value when sufficient information is available to calculate a reasonable estimate of the volume of waste at the site. The Site Group also argued that the nearest well factor value was incorrectly determined based on residential drinking water wells subject to Level I concentrations; that is, contaminant concentrations at or above health-based benchmarks. It claimed that these wells have been permanently abandoned and, thus, should not be used. Similarly, it stated that these abandoned wells should not be used to calculate target populations subject to actual contamination. The Site Group also questioned the calculations for ground water target populations subject to potential contamination, stating that the information used to determine the target population was inaccurate or outdated. It conducted its own investigation of the potentially affected target population and concluded that the population should be significantly reduced. The Site Group claimed that, once corrected, the HRS score would drop below the 28.50 listing cutoff. Although the Site Group's comments focused on the contaminated soil source and the ground water pathway, it provided recalculated scoresheets for both the ground water and surface water pathways as an attachment to support its claims.

1.2.3.1 Standard of Review

Citing former D.C. Circuit Court decisions on NPL listings, the Site Group stated that the “applicable standard of review for actions taken by the U.S. EPA is whether the action is ‘arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.’” It further stated that the “EPA’s NPL

¹EPA dockets serve as the repository for information related to particular Agency actions, which include the regulatory and non-regulatory process. When a rulemaking or non-rulemaking action is announced, a docket is established with an assigned tracking number to accumulate materials throughout the process. Dockets may contain Federal Register documents, a variety of supporting documentation, and public comments. HRS scoresheets and documentation records are maintained in the EPA Headquarters Superfund Docket. Associated reference materials used to support a site NPL listing are maintained in the EPA Regional Dockets.

listing decision will be upheld only if it is ‘consistent with the Act and the regulations promulgated thereunder, and is not arbitrary.’” The Site Group claimed, however, that “[t]he information contained in the HRS Docket does not support the assigned HRS score of 69.33,” but rather “a HRS score no higher than 24.73.” The Site Group went on to say that EPA “relied on inaccurate, incomplete and/or outdated information relating to the Site, which will result in an arbitrary and capricious NPL ranking decision if allowed to proceed as proposed.” It also claimed that EPA included unreliable or inaccurate assumptions, arguing that “[t]hese misassumptions are then the basis for inflating the scoring values assigned to the Site in an erroneous attempt to increase the HRS score above the minimum necessary to justify the proposed NPL listing.”

In response, EPA has placed the Lammers Barrel site on the NPL due to releases of hazardous substances from the site to drinking water wells and to adjacent creeks, as well as ongoing threats posed by the site to nearby drinking water wells, fisheries, and sensitive environments. CERCLA Section 105(a)(8)(A) required the establishment of criteria for determining priorities among releases or threatened releases; the Agency listed three methods in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) by which releases may be determined eligible for the NPL. As one of the three methods for placing a site on the NPL, the NCP at 40 CFR 300.425(c)(1) states that a release may be included on the NPL if “[t]he release scores sufficiently high pursuant to the Hazard Ranking System as described in Appendix A to this part (40 CFR Part 300.425).” The revised HRS used in the scoring of Lammers Barrel was promulgated on December 14, 1990 (55 FR 51569), and this support document shows that it was correctly implemented in the evaluations applied to this site. As indicated in the HRS documentation record at proposal for the Lammers Barrel site, the site scored 69.33, which is well above the HRS cutoff score of 28.50, and it remains so after consideration of the comments received from the Site Group regarding this proposed listing. Specific comments on the alleged “misassumptions” and outdated or inaccurate data are addressed in the support document sections below.

1.2.3.2 Hazardous Waste Quantity

The Site Group stated that the hazardous waste quantity was arbitrarily and incorrectly assigned a default value of 100 when sufficient information is available to calculate a reasonable estimate of the waste at the site. It claimed that the “original HRS scoring failed to evaluate the ‘waste material’ term in detail, and instead arbitrarily defaulted to the conclusion that the quantity of waste was unknown, due to alleged uncertainty with regard to the vertical distribution of waste.” It asserted that “by evaluating the most recent site assessment data . . . in detail, the vertical extent of the impacted soils can be reasonably estimated, and a conservative estimate of the volume of ‘waste materials’ can be calculated.”

The Site Group presented two methods for determining an estimate of the volume of wastes at the site: a method for determining a conservative estimate of the volume of waste, and a method for calculating the maximum potential volume of waste. The first method presented by the commenter employed photoionization detector (PID) readings and analytical results from soil boring samples to calculate a “conservatively estimated volume of waste materials” The “outer” extent of the source was defined as “the midpoint between contaminated and non-contaminated soil samples,” or as the property boundary where non-contaminated samples were not collected. The vertical extent of the source was defined as “the sum of the vertical zones where laboratory soil sample data, or the analytical detection limits exceeded one or more of the remedial action levels.” For vertical zones where analytical data were not available, PID readings above 25 parts per million were used. The potentially impacted area was divided

into 28 sub-areas, and the square footage of each sub-area was electronically calculated. This square footage then was multiplied by the average vertical depth of contamination for that sub-area. Finally, “[t]he summation of these volumes result[ed] in the total volume of waste material.” According to the commenter, using the appropriate hazardous waste quantity evaluation equation for contaminated soil, this total volume of waste material results in a hazardous waste quantity value of 22.9 for the source.

The second method used by the Site Group involved a calculation of the maximum potential volume of waste materials based on the assumption that the entire Lammers Barrel property was contaminated to a depth of 36 feet. The 36-foot depth, which is based on the “deepest sample exhibiting concentrations exceeding the remedial action levels . . . even though this sample was collected from a depth where the soils were saturated,” was multiplied by the total surface area within the property boundaries to derive the maximum volume of potentially impacted soil at the site. As with the first method, the commenter concluded that, using the appropriate hazardous waste quantity evaluation equation for contaminated soil, this maximum volume of waste material results in a hazardous waste quantity value of 53.8 for the source.

The Site Group concluded that both of its methods yield a reasonable estimate of the waste at the site, which results in the assignment of a value of 1, rather than 100, for the hazardous waste quantity factor for the site. It asserted that this change in the hazardous waste quantity factor, along with its revisions to the ground water targets values discussed in the support document sections below, produce a revised ground water pathway score of 39.31 rather than 100 as is scored in the HRS documentation record. When applied to the surface water pathway, the Site Group claimed that the change in the hazardous waste quantity factor reduces that pathway’s score from 96.06 to 30.02.

In response, EPA correctly and appropriately assigned a hazardous waste quantity factor value of 100 to the contaminated soil source (Source 1) at the Lammers Barrel site. Section 2.4.2.1 of the HRS directs the scorer to evaluate source hazardous waste quantity based on the following tiered hierarchy: hazardous constituent quantity, hazardous wastestream quantity, volume, and area. According to HRS Section 2.4.2.1.1, Tier A, *Hazardous constituent quantity* for a source, is calculated based solely on the mass of eligible hazardous substances allocated to the source. If the hazardous constituent quantity can be adequately determined, the source hazardous waste quantity value is assigned using the appropriate calculation provided in HRS Table 2-5, and the remaining three tiers are assigned a value of zero for the source. The HRS considers the hazardous constituent quantity for a source adequately determined if “the total mass of all CERCLA hazardous substances in the source and releases from the source . . . is known or is estimated with reasonable confidence.” If the hazardous constituent quantity for a source cannot be adequately determined, the scorer is to assign a value for hazardous constituent quantity based on available data and then proceed to the next tier, Tier B, *Hazardous wastestream quantity*. Sections 2.4.2.1.2 through 2.4.2.1.4 of the HRS similarly direct the scorer to proceed to the next tier only if the waste measurement for the tier being evaluated cannot be adequately determined (or for Tier B, *Hazardous wastestream quantity*, if the source is an unallocated source).

The Preamble to the HRS further explains the use of various types of data in hazardous waste quantity calculations. On page 51542 of the Preamble, EPA explains that the HRS allows the scorer to assign a source hazardous waste quantity value calculated from one of four methods distinguished by the type and adequacy of available data. Adequacy of data employed by the HRS ranges from sufficient to calculate the mass of hazardous constituents in a source to adequate only for the calculation of the source's area. This approach allows the scorer flexibility to use different types of available data; however, “[w]here better data are available, they may be used in scoring the [hazardous waste quantity] factor. This

approach is in keeping with the intent of Congress that the HRS should act as a screening tool for identifying sites warranting further investigation."

In the case of the Lammers Barrel site, EPA determined that available data were not sufficient to adequately or reliably define the hazardous constituent quantity or hazardous wastestream quantity of the contaminated soil source at the site. No records were available or were provided by the commenter to indicate the total mass of contaminants or the total wastestream released to facility soils, and the amount of wastes released to ground water and surface water is unknown. The source volume measurement could not be adequately determined because, although hazardous substances were detected in a soil sample (GP-4) collected at a depth of 34 to 36 feet below ground surface, insufficient information was available to determine whether the soil contamination is vertically continuous (HRS documentation record as proposed, page 21). Therefore, the area measurement, Tier D, was calculated on page 21 of the HRS documentation record as proposed to determine the source hazardous waste quantity. The area measurement was based on the documented areal extent of soil contamination defined by April 2000 and August 2000 soil samples showing VOC concentrations above remedial action levels. This area measurement was estimated to be 52,245 square feet, which when divided by 34,000 as directed by HRS Table 2-5, resulted in an area assigned value, and subsequently a source hazardous waste quantity value, of 1.54.

In determining the hazardous waste quantity factor value for the migration pathways, Section 2.4.2.2 of the HRS states:

If the hazardous constituent quantity is not adequately determined for one or more sources . . . assign a factor value as follows: If any target for that migration pathway is subject to Level I or Level II concentrations . . . assign either the value from Table 2-6 or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway.

For the Lammers Barrel site, as previously stated, insufficient data were available to adequately determine the hazardous constituent quantity for Source 1. Therefore, consistent with HRS Section 2.4.2.2, the hazardous waste quantity factor was appropriately assigned a 100 on pages 40 and 49 of the HRS documentation record as proposed for the ground water and surface water pathways, respectively, because both ground water and surface water targets are subject to actual contamination at Level I and/or Level II concentrations.

With regard to the commenter's first method of estimating the volume of waste at the site, EPA considers determination of the areal extent of contamination based on midpoints between contaminated and non-contaminated samples and/or property boundaries both arbitrary and potentially flawed. There is no scientific basis for using a midpoint between contaminated and uncontaminated sample locations. Furthermore, where non-contaminated samples were not collected, the use of property boundaries to define the extent of the contaminated soil source is not justified because soil contamination is not necessarily limited by such boundaries. In the case of the Lammers Barrel site, EPA employed a conservative approach by using only the outermost contaminated sample locations where VOC concentrations exceeded remedial action levels to define the areal extent of contamination.

Regarding the commenter's vertical measurements used in its first method of estimating the volume of waste at the site, while PID readings such as those used by the commenter are a valuable field tool, they generally are not used to define the extent of contamination. PID and similar field monitoring equipment

readings have not been proven sufficiently reliable or accurate to use as a basis for quantifying a source's area or volume. Instead, readings from field monitoring equipment may be useful for such matters as determining the level of personal protection equipment needed to safeguard the health and safety of the sampling team, in determining where samples might best be collected, and as evidence to support inference of contamination between sampling points.

EPA also disagrees with the commenter's approach in its second method of estimating the volume of waste at the site by assuming that the entire Lammers Barrel property was contaminated to a depth of 36 feet. The Agency generally would not consider such an approach to determining the volume of waste at the site because there is no basis for the assumption that the entire property is contaminated, or that it is uniformly contaminated to a depth of 36 feet. Additionally, such an approach may not adequately illustrate "the maximum potential volume of waste materials" at the site as the commenter claims because, as previously noted, a contaminated soil source is not necessarily limited to or defined by a facility's property boundaries.

Further, the commenter's claim that both of its methods used to calculate a hazardous waste volume for Source 1 result in a hazardous waste quantity factor of 1 for the site is erroneous. In accordance with HRS Section 2.4.2.2 and Table 2-6, a value of 1 would be assigned as the hazardous waste quantity factor only if the *hazardous constituent quantity* is adequately determined for one or more sources, not the volume measurement. The commenter did not provide any evidence that the hazardous constituent quantity for the source could be adequately determined, nor did it provide any estimate of the quantity of wastes released to ground water and surface water.

EPA notes that even if the commenter's volume estimates were used to determine the hazardous waste quantity for the site, this would have no overall effect on the hazardous waste quantity factor value. As noted above, when targets are exposed to Level I or Level II concentrations, the HRS requires the scorer to assign a value from Table 2-6 or 100, "whichever is greater," as the hazardous waste quantity factor for the pathway. Therefore, using either of the two volume calculation methods applied by the commenter, a hazardous waste quantity value of 100 still would be assigned for the site for both the ground water and surface water pathways since targets in both pathways are subject to Level I and/or Level II concentrations. This comment does not affect the HRS documentation record or site score.

1.2.3.3 Ground Water Pathway: Scoring Abandoned Wells

The Site Group raised issue with the use of abandoned wells for assigning the nearest well factor value and the associated target population. It stated that "[u]nder the applicable HRS criteria and guidance, a well must be used as a drinking water well at least once a year, or maintained as a standby well, to qualify as the 'nearest well target.'" Based on this assertion, the Site Group claimed that residential wells that "have been permanently abandoned and no longer exist . . . should not have been used when identifying the nearest well target . . ." It pointed to the use of two abandoned residential wells to assign the nearest well target value, stating that "[b]ecause these wells have been abandoned, they do not meet the criteria for the nearest well target," and that "[t]hey are no longer capable of drawing water from the aquifer and cannot be used as standby wells." It concluded that, to be consistent with the HRS Guidance Manual, "the HRS scoring documentation must be corrected to use RW-2 (Level II concentrations), as the nearest target well."

In addition to the use of two abandoned wells to assign the nearest well factor, the Site Group similarly questioned the use of abandoned residential wells to calculate the target population subject to Level I concentrations. It claimed that “the other five residential wells noted to contain Level I concentrations . . . are on properties that are now serviced by the county water supply system.” It stated that “it is reasonable to assume that these other residential wells are no longer being used as drinking water supply wells.” The Site Group acknowledged that these five wells may be used as standby wells, but stated that it is incumbent on EPA to confirm their use as standby wells and claimed that this could have been readily determined. It asserted that “[t]he U.S. EPA’s assumption, without any factual support, that residents who have had their homes connected to the municipal water supply still continue to maintain their private wells as standby drinking water supply wells, is mere speculation and an insufficient basis on which to score the Site.” The Site Group concluded that “[s]ince no wells containing Level I concentrations are being used as drinking water wells, the target population subject to Level I concentrations should be zero . . .”

The Site Group also pointed out that one of the wells used to determine the target population subject to Level II concentrations, well RW20, also is now served by the public water supply system. It therefore stated that the population associated with this well should not be included in the site score².

In response, residential populations associated with wells closed or abandoned due to contamination, or otherwise no longer used for drinking water purposes, are correctly scored as the nearest well and as subject to Level I and Level II concentrations. Section Q of the Preamble to the HRS, Consideration of Removal Actions (*Current Versus Initial Conditions*)(55 FR 51567, December 14, 1990), states the following:

HRS scoring will not consider the effects of responses . . . such as providing alternate drinking water supplies to populations with drinking water supplies contaminated by the site. In such cases, EPA believes that the initial targets factor should be used to reflect the adverse impacts caused by contamination of drinking water supplies; otherwise, a contaminated aquifer could be artificially shielded from further remediation. This decision is consistent with SARA section 118(a), which requires that EPA give high priority to sites where contamination from the site results in closed drinking water wells. Similarly, if residents are relocated or if a school is closed because of contamination due to the site, EPA will consider the initial targets in scoring the site.

Thus, for the Lammers Barrel site, the nearest well factor was appropriately evaluated on page 41 of the HRS documentation record as proposed using abandoned wells RW3 and RW10 because these wells were closed for drinking water purposes as the result of the contamination (HRS documentation record as proposed, pages 34 and 41). Furthermore, the nearest well factor was correctly assigned a value of 50 because cis-1,2-dichloroethene (70.3 to 75.7 ppb) was documented in wells RW3 and RW10 at concentrations exceeding the MCL benchmark of 70 ppb, and vinyl chloride (45.9 to 46.1 ppb) was documented in these wells at concentrations exceeding the MCL benchmark of 2 ppb (HRS

²In its comments, the Site Group erroneously referred to the population subject to Level I concentrations as 22, whereas the HRS documentation record, page 41, scores 22.2 people. Similarly, the Site Group attributed four persons to the Level II well now served by a public system, whereas the HRS documentation record, page 42, scores only 2.65 persons for that well.

documentation record as proposed, pages 34 and 36, and Reference 8, the Sample Analytical Data Report).

In addition, residential populations associated with abandoned wells were appropriately evaluated as subject to Level I and Level II concentrations as identified on pages 41 and 42 of the HRS documentation record as proposed. As explained above, whether the abandoned wells currently are capable of drawing water from the aquifer or whether they are used as standby wells is not relevant to HRS scoring because these wells were abandoned for drinking water purposes due to site-related contamination. Furthermore, the distribution of an alternate supply of drinking water did not remediate the contaminated drinking water that caused the closure of these residential wells, nor does it prevent migration of the ground water contamination plume to other drinking water wells.

This comment does not affect the HRS documentation record or site score.

1.2.3.4 Ground Water Pathway: Potential Targets

The Site Group questioned the calculations for ground water target populations subject to potential contamination, stating that the information used to determine the target population was inaccurate or outdated. It claimed that “an investigation into several of the underlying assumptions for this term indicates that the estimate of potentially affected population in the HRS score was overstated.”

The Site Group stated that it made telephone calls to business addresses within the 0 to 1/4 mile site radius to determine the well status and number of users served by private wells at those properties. Using the information the Site Group obtained from the business owners or employees, it concluded that “the population numbers on the HRS scoring worksheet for the closest area (0 to 1/4 miles from the site) were significantly decreased compared to the original HRS Scoring Package,” which results in a reduction in the overall HRS site score. Specifically, in an attachment to its comment letter, the Site Group proposed using a total of 35 persons for the 0 to 1/4 mile radius, rather than 205 persons as is scored on page 43 the HRS documentation record as proposed. It based this revised population count on its telephone contact with: 1) a business owner who said his two properties were now served by city water and that his well is used only for cooling water at one of those properties; and 2) an unidentified employee at a third business that said they use city water and did not know of any private well on the property. The Site Group included with its comment letter its telephone records to support its population calculations for the 0 to 1/4 mile site radius. According to the Site Group, this revised well user population results in a reduction of the distance-weighted population value from 164 to 53.

The Site Group also declared that the populations served by wells within the 1 to 2 mile radius and the 2 to 3 mile radius were incorrectly summed in the HRS documentation record, overstating the population. In its attachment to the comment letter, it stated that 1523, not 1623, people are associated with the 1 to 2 mile radius, and 621, not 614, people are associated with the 2 to 3 mile radius.

As a result of the reduction in the population associated with the 0 to 1/4 mile radius and the Site Group’s recalculation of the population in the 1 to 2 and 2 to 3 mile radii, the commenter claimed that the potential contamination factor value would be 521.1, not 532.2 as is scored on page 43 of the HRS documentation record. Based on its own investigation of the population served by wells within the 0 to 1/4 mile radius, the Site Group further surmised that:

If a more extensive investigation of the population assumptions for the other wells located in the ¼ to ½, ½ to 1, 1 to 2, 2 to 3 and 3 to 4 mile radius areas were conducted, the results of the limited investigation conducted by ARCADIS³ show that it is probable the estimate of the potentially affected population would decrease significantly further.”

In response, whether the commenter’s population estimates are more accurate or precise than those employed by EPA in the HRS documentation record has no impact on the site HRS score or the site listing decision. Indeed, the entire well user population subject to potential contamination has no bearing on the listing decision because the site would still score above the 28.50 listing cutoff even if this population were not evaluated. Furthermore, the method used by EPA to estimate drinking water populations for HRS scoring purposes is consistent with the HRS. HRS Section 3.3.2 specifies the use of county persons per household averages when calculating drinking water populations based on number of residences, and Section 3.3.2.4 employs population ranges for those persons subject to potential contamination. As is stated in Section IIIA of the Preamble to the HRS (page 51541), “potentially exposed populations are assigned values based on ranges rather than exact counts, reducing documentation requirements.” This is in keeping with the scope of the site assessment process and the use of the HRS as a screening tool.

To obtain the population estimates presented on page 43 of the HRS documentation record as proposed for targets exposed to potential contamination, EPA utilized the most current Ohio EPA community water supply database, submitted as Reference 22, available at the time of proposal. EPA does acknowledge that the Site Group’s population counts for the 0 to 1/4 mile radius may indeed be more accurate and/or current than the estimates utilized in the HRS documentation record, but would need to have more information than that supplied in the commenter’s telephone records to determine whether these population counts are usable for HRS purposes. Specifically, the Agency would need sufficient information to determine whether the three businesses contacted by the commenter were connected to city water because of site-related contamination or for some non-site related reason. As is stated above in Section 1.2.3.3, Ground Water Pathway: Scoring Abandoned Wells, those populations associated with abandoned drinking water wells are still scored as subject to Level I or Level II concentrations if the wells were closed for drinking water purposes due to site-related contamination. The commenter does not specify the reason that the three businesses contacted no longer use their wells for drinking water. Additionally, in the case of the unidentified employee at one of the businesses contacted by the commenter, EPA cannot ascertain from the information provided in the telephone record whether this particular employee would be in an appropriate position to know the source of the drinking water at that business. The employee did not even know whether a private well was located on the property.

EPA also acknowledges that, as pointed out by the commenter, the population estimates for the 1 to 2 and 2 to 3 mile radius categories were mathematically incorrect. EPA has verified the commenter’s corrections, and has changed the population estimates for these distance categories on page 43 of the HRS documentation record accordingly. As is shown in the table below, however, these corrections have no impact on the site score because the adjusted values fall well within the same population ranges as those in the HRS documentation record at proposal. The table also shows that consideration of all of the commenter’s proposed revisions have only minimal impact on the final potential population value. Thus

³ARCADIS G&M, Inc. of Chicago, Illinois, prepared the comment letter on the proposed Lammers Barrel site listing on behalf of the Lammers Barrel Site Group.

even if the commenter's revised population estimates for the 1/4 to 1 mile radius were used, this would have no overall effect on the site score or listing decision.

Distance Category (miles)	HRS Documentation Record Population Estimate at Proposal	HRS Table 3-12 Population Ranges (Population Value)	Commenter's Population Estimate	HRS Table 3-12 Population Ranges (Population Value)
0-1/4	205	101 to 300 (164)	35	31 to 100 (53)
1/4-1/2	240	101 to 300 (102)	(no change)	101 to 300 (102)
1/2-1	2,030	1,001 to 3,000 (523)	(no change)	1,001 to 3,000 (523)
1-2	1,623	1,001 to 3,000 (294)	1,523	1,001 to 3,000 (294)
2-3	614	301 to 1,000 (68)	621	301 to 1,000 (68)
3-4	38,960	30,001 to 100,000 (4,171)	(no change)	30,001 to 100,000 (4,171)
Total population value/10:		532		521

Using the commenter's population counts for the 0 to 1/4 mile distance category and the corrections to the population counts in the 1 to 2 and 2 to 3 mile distance categories, as shown in the above table, would reduce the drinking water population subject to potential contamination from 532 to 521 and the total ground water targets factor from 830.2 to 819.2. This change to the ground water targets factor still results in an uncapped ground water migration pathway score of 174.76, which is well above the maximum pathway score of 100.

Regarding the commenter's contention that additional investigation into the populations not investigated by the commenter likely would result in a further reduction to the site score, updated or more precise population data would have to demonstrate a significant decrease in the estimated number of well users to result in any reduction of the population values because, as is shown in the above table, these values are assigned based on broad population ranges. This is particularly true for those distance categories further from the site. For example, as previously stated, the corrections to the population estimates in the 1 to 2 mile radius and the 2 to 3 mile radius had no impact on the assignment of the distance-weighted population values because it's the revised population estimates fell well within the same population ranges as those scored in the HRS documentation record at proposal for the applicable distance categories. EPA further notes that a detailed investigation into more precise and updated population estimates, and the significant cost associated with such an investigation for the entire 4 mile target distance limit, is not warranted for this site because even if the potential contamination factor value were not evaluated, the site would still score above the 28.50 listing cutoff based solely on the evaluation of ground water populations subject to Level I and Level II concentrations. The exclusion of the entire

drinking water population subject to potential contamination would reduce the total ground water targets factor from 830.2 to 298.2. This change would result in a ground water migration pathway score of 63.62, which, when combined with the surface water migration pathway score, produces an overall site score of 57.61. Furthermore, even if the ground water pathway were not evaluated at all, the surface water pathway alone results in a site score above the 28.50 listing cutoff. This comment does not affect the HRS documentation record or site score.

1.2.4 Conclusion

The original HRS score for the Lammers Barrel site was 69.33. Based on the above response to comments the score remains unchanged. The final scores for the Lammers Barrel site are:

Ground Water	100.00
Surface Water	96.06
Soil Exposure	Not Scored
Air	Not Scored
HRS Score	69.33

Region 6

2.1 Jones Road Ground Water Plume, Harris County, Texas

2.1.1 List of Commenters/Correspondents

SFUND-2003-0009-0121	Comment dated June 27, 2003, from Gloria G. Selby, secretary of the Jones Road Coalition for Safe Drinking Water, Houston, Texas
SFUND-2003-0009-0122	Comment dated June 30, 2003, from Donna M. Hofbauer and Joseph A. Hofbauer, private citizens
SFUND-2003-0009-0123	Comment dated June 30, 2003, from a private citizen
SFUND-2003-0009-0139	Comment dated June 25, 2003, from Honorable John R. Carter, Member of Congress
SFUND-2003-0009-0094	Correspondence dated February 4, 2003, from the Honorable Rick Perry, Governor of Texas

2.1.2 Site Description

The Jones Road Ground Water Plume site is located approximately one-half mile north of the intersection of Jones Road and FM 1960 in a mixed residential/urban/light industry area outside the city limits of northwest Houston, Harris County, Texas. Drinking water wells have been contaminated with cis-1,2-dichloroethene (DCE), tetrachloroethene (PCE), and trichloroethene (TCE). PCE has been detected in drinking water wells above EPA's maximum contaminant level (MCL) of 5.0 µg/L.

During a routine sampling of public wells by the Texas Commission on Environmental Quality's (TCEQ's) Houston office in December 2000, PCE, DCE, and chloromethane were detected in a public well supplying drinking water to approximately 18 employees, 90 children in childcare, and 150 to 200 students at a gymnasium. Subsequent samples collected on January 25 and May 2, 2001, confirmed the presence of PCE, DCE, and chloromethane in the public drinking water supply well.

During the site inspection in March and April of 2002, TCEQ collected samples from 43 drinking supply wells in Harris County and found concentrations of PCE at or above the MCL in eight wells. Concentrations of PCE in ground water samples were as high as 128 µg/L. As a result, filtration systems were placed on those eight wells.

The source of the PCE, TCE, and DCE contamination is unidentified, though previous investigations have suggested several potential source areas near the affected drinking water wells. Several businesses within the area use chlorinated solvents, one of which is Bell Dry Cleaners. In June 2001, a phase I environmental assessment was conducted at Bell Dry Cleaners, and leakage was discovered from a dry cleaning machine into the storm drains. PCE and vinyl chloride were found in ground water and soil samples collected from the Bell Dry Cleaners facility during the environmental assessment. On May 1,

2002, TCEQ initiated an emergency order which directed the owner of Bell Dry Cleaners and the owner of the property to, among other actions, maintain the current filtration systems, sample all wells within a half mile of the facility and add filtration systems to any new wells with contamination, investigate and report on the nature and extent of the contamination, and conduct any necessary further investigation. In May 2002, Bell Dry Cleaners volunteered to stop using PCE. On August 21, 2002, an order was issued affirming modifications to the May 1, 2002, emergency order. This ordered the facility and property owners to continue cessation of all use of PCE at that location, grant access for remediation, and add a deed restriction to the shopping center property that prohibits use of PCE.

Based on samples collected in May 2003, 23 wells have had detections of PCE at or above the EPA MCL of 5 parts per billion (ppb). Twenty-five wells have had detections of PCE below the MCL. Since 2002, filtration systems have been placed on the 24 wells with levels of PCE at or above the MCL.

Public and private drinking water wells serving residents, workers, and students have been found to be contaminated with chlorinated solvents above MCLs and other EPA health-based drinking water standards.

2.1.3 Summary of Comments/Correspondence

The Honorable Rick Perry, Governor of Texas, supported listing the Jones Road Ground Water Plume site on the NPL. The Honorable John R. Carter, Member of Congress, also supported the listing of the site on the NPL, and added that the contamination needs to be addressed immediately.

The Jones Road Coalition for Safe Drinking Water (herein referred to as the coalition), as well as Ms. Donna M. Hofbauer and Mr. Joseph A. Hofbauer, commented in support of listing the Jones Road Ground Water Plume site on the NPL, but also stated that the documents used in the HRS documentation package did not adequately represent the severity of the situation in this area and in fact, at times “may actually downplay the problem in an effort to relieve the U.S. Environmental Protection Agency (‘Agency’) of the responsibility for taking the critical actions necessary to protect human health and the environment.” A comment received from a private citizen also indicated that the severity of the plume “requires much more attention than what is being given to it.”

2.1.3.1 Support for Listing

The Honorable John R. Carter stated that “[a]pproximately 600 residents of the [Jones Road] area, who rely on these wells for their water, are facing pollution of their drinking water by this plume.” He commented that any delay in the cleanup of this area “would be seriously detrimental to this community.” He urged EPA to “give the Jones Road Ground Water Plume site the official designation [as an NPL site] this Fall, so that the work to solve this problem can begin.”

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, commented that this site has scored high enough to be placed on the NPL; however, they would have preferred that “this issue be corrected without placing resident homes on a Superfund list.” They expressed concern that “[t]here appears [to be] sufficient evidence to support an emergency clean-up action to retard the further migration of this toxic contaminant into nearby un-impacted wells.” They requested “that this contamination issue be

elevated to the highest priority and the Agency consider taking Emergency Actions under Superfund to address the problem.”

The coalition stated that it would have preferred that “those parties responsible for the contamination would have been held accountable in a way that would positively effect our groundwater quality.” The coalition asserted that “it does appear that moving ahead with the EPA [decision to list the site] is the logical process to follow in dealing with this situation.”

Ms. Hofbauer and Mr. Hofbauer also expressed concern that “[a]s the Agency ‘studies this problem’ over the next 2 to 4 years additional wells are being degraded and people continue to be exposed.”

In response, EPA has added Jones Road Ground Water Plume site to the NPL. Listing makes a site eligible for remedial action funding under CERCLA, and EPA will examine the site to determine what response, if any, is appropriate. Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and upon more detailed investigation may not be necessary at all in some cases. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account State priorities, further site investigation, other response alternatives, and other factors as appropriate. EPA will not stop work at some sites to begin work at other higher-scoring sites added to the NPL more recently.

With regard to the commenters’ preference for addressing issues at this site without placing residential homes on a Superfund list, although the boundaries of an NPL site generally are not defined when a site is placed on the NPL (see Section 2.1.3.3, Extent of Site), at the present time, the contamination which is the focus of the listing is the contaminated ground water plume from which these homes draw drinking water.

With respect to the commenters’ concern that there be an “an emergency clean-up action to retard the further migration of this toxic contaminant into nearby un-impacted wells” and that “this contamination issue be elevated to the highest priority and the Agency consider taking Emergency Actions under Superfund to address the problem,” before the ground water can be cleaned up, the immediate threat to human health must be addressed. Therefore, TCEQ has responded by placing filtration systems on all homes at which contamination was detected at a level greater than the MCL. It is necessary to perform the RI/FS to determine the complete extent of the plume and determine the best remedial action. The RI/FS for this site has started on August 25, 2003, and is expected to be completed by the end of the year.

2.1.3.2 Response Process

Ms. Hofbauer and Mr. Hofbauer commented that they are concerned about the “slow process to be followed by the Agency when correcting this problem following Superfund guidelines.” They stated that they have been informed that “it will be at least two years until the Agency completes a Site Investigation” and that “it may take in excess of 15 years to remediate the problem.” They indicated that “there is no guarantee that the water quality will be cleaned to pre-contamination levels.” They expressed concern over the length of time “it has taken to place the site on the NPL” because, during this time, an “additional 9 wells were found contaminated” indicating that the plume is “migrating quickly through the aquifer.”

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, stated that this plume “impacts at least 200 residents directly or indirectly” and that, if it reaches the nearby MUD [municipal urban district], “thousands of additional residents will be impacted.”

The coalition commented that it is “supportive to the EPA’s mandate to safeguard the natural environment,” that the ground water should be free of hazardous substances, and that EPA’s “primary consideration was remediating the contaminant situation.” They disagree with the “timetable and impact of decisions the Agency may take.” The coalition asserted that besides the sampling that has already been done, little else has been done to correct the situation. It further commented that the plume has spread and is now affecting more wells and that residents on the “edge of the plume . . . feel strongly that they should not be compelled to wait for some six years for study and planning (while their wells become contaminated), but would rather see things move along at a less sedate pace.” The coalition also stated that many residents with contaminated wells “do not want to wait years for the Agency to begin pumping and treating, if you can quite quickly determine that this is the proper course of action.” It believes this is a “profoundly bureaucratic process, a reminder to the Agency representatives dealing with this issue that real human beings with families and concerns are being affected by inaction.”

In response, these comments have no impact on the site score and do not undermine the basis for the listing decision. The Agency has in place an orderly procedure for identifying sites where releases of substances addressed under CERCLA have occurred or may occur, placing such sites on the NPL, evaluating the nature and extent of the threats at such sites, responding to those threats, and deleting sites from the NPL. The purpose of the initial two steps is to develop the NPL, which identifies for the States and the public those sites that appear to warrant remedial action (56 FR 35842, July 29, 1991). The evaluation or RI/FS phase involves onsite testing to assess the nature and extent of the public health and environmental risks associated with the site and to determine what CERCLA-funded remedial actions, if any, may be appropriate. After a period of public comment, the agency responds to those threats by issuing a record of decision which selects the most appropriate alternative. The selected remedy is implemented during the remedial design/remedial action phase. Finally, the site may be deleted from the NPL when the Agency determines that no further response is appropriate. The State of Texas has installed filtration systems on 24 residential wells which are tested quarterly. The RI/FS phase for this site was initiated on August 25, 2003. This investigation will define the plume area more accurately and identify alternatives for remedial action.

Regarding the comments that an NPL listing will delay remediation of the site, including a site on the NPL does not necessarily cause EPA to delay the RI/FS phase of the process. Once a site is proposed to the NPL, further investigations may be initiated to determine the appropriate response action(s) for addressing the contamination at a site. An NPL listing may facilitate achieving a comprehensive cleanup that is protective of human health and the environment. EPA will work to ensure that cleanup is prompt and cost effective.

2.1.3.3 Extent of Site

A private citizen commented that the contaminant plume is more extensive than represented in the HRS package and that “the number of contaminated wells has increased to 51 and the total area has increased five fold” increasing the boundaries of the plume. “The new boundaries are; northern boundary–North of

Woodedge Drive southern boundary–South of Jones Road West western boundary–Oak Valley eastern boundary–1/4 mile east of Jones Road.”

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, commented that the approximate boundaries of the plume provided in the HRS documentation record at proposal are under estimated. EPA’s calculation of 695,927 square feet of contamination was derived by “merely ‘connecting the dots.’” They stated that this method of estimation “totally ignores the upper zone of the Chicot aquifer” and that the extent of contamination in the upper Chicot is unknown, but may extend beyond the area defined in the HRS documentation record at proposal. They indicated that the wells used in the estimation are approximately 250 feet deep. They asserted that to “reach the points on the map, the plume needed to migrate above those wells in the shallower portion of the Chicot.” They indicated that the “wells shown as impacted are those that the contamination found a pathway through to the underlying drinking water zone.” The coalition, along with Ms. Hofbauer and Mr. Hofbauer, asserted that EPA should reevaluate the dimensions of the plume using more sophisticated computer modeling programs that are used in many other applications. They commented that “[b]ased upon sample results of contaminated wells, it is more likely that the plume in the shallow portion of the aquifer is more than twice the size of the by (sic) plume as depicted in Figure 4 [of the HRS documentation record at proposal] and extends north beyond Woodedge, south to Jones Road West, east past Barely Lane and west to Mile Drive.” They also expressed concern that the plume may have affected over 200 homes and businesses in the area.

The coalition expressed concern that EPA failed to “properly quantify the extent of the plume” and created “a potentially unrealistic picture of the plume’s true impact.” It asserted that there appears to be a relationship between the extent of the plume and the age of the wells and that “[o]lder wells, where grout may have suffered degradation, could be impacted differently by contamination” indicating that “PCE may be moving down along well casings.” It indicated that “[i]f newer wells, with fresher grout, are not contaminated (as appears to be the case) this suggests that PCE may be moving down along well casings.” It asserted that the plume is moving based on the age of wells.

In response, the final extent of the plume has not been determined. After listing, but prior to final remediation efforts, the extent of the plume will be determined. Placing a site on the NPL is based on an evaluation, in accordance with the HRS, of a release or threatened release of hazardous substances, pollutants, or contaminants. However, the fact that EPA initially identifies and lists the release based on a review of contamination at a certain parcel of property does not necessarily mean that the site boundaries are limited to that parcel.

CERCLA section 105(a)(8)(A) requires EPA to list national priorities among the known “releases or threatened releases” of hazardous substances; thus, the focus is on the release, not on precisely delineated boundaries. Further, CERCLA section 101(a) defines a “facility” as the “site” where a hazardous substance has been “deposited, stored, placed, or otherwise come to be located.” The “come to be located” language gives EPA broad authority to clean up contamination when it has spread from the original source. On March 31, 1989 (54 FR 13298), EPA stated:

HRS scoring and the subsequent listing of a release merely represent the initial [emphasis added] determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will need to be refined and improved as more information is developed as to where the contamination has come to be located; this refining step generally comes during the RI/FS stage.

The revised HRS (55 FR 51587, December 14, 1990) elaborates on the "come to be located" language, defining "site" as "area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources, and may include the area between the sources."

Until the site investigation process has been completed and a remedial action (if any) selected, EPA can neither estimate the extent of contamination at the site nor describe the ultimate dimensions of the NPL site. Even during a remedial action (e.g., the removal of buried waste), EPA may find that the contamination has spread further than previously estimated, and the site definition may be correspondingly expanded.

In addition, the objective of an SI is to gather information to support a site decision regarding the need for further Superfund action. It is not a study of the full extent of contamination at a site or a risk assessment. Often the scope of an SI can be limited to screening the site to determine if the site qualifies for the NPL. Therefore, limited samples are collected during this stage.

Furthermore, although expanding the extent of the plume would likely result in an increase in the site score, the listing decision would not change. As stated on page 7 of the HRS documentation record at proposal, the maximum value for the ground water migration pathway is 100, and this site scored 93. An increase in the number of actually contaminated targets could increase the site score from 46.5 to a maximum of 50.

2.1.3.4 Response Action

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, commented that although EPA/TCEQ had provided a "temporary fix and placed numerous residents on a filter system," this does not solve the problem. They asserted that the filters are not 100 percent effective and that the residents must deal with "red-tainted smelly water and mosquito-laden ponds in their backyards from the daily filter purges."

Ms. Hofbauer and Mr. Hofbauer asserted that "the Agency should evaluate replacement of existing contaminated wells with new deeper double-cased wells" that will "retard the migration of contaminants into the lower clean water zones." In addition, they would like existing wells to be "utilized where possible to remove the contamination that has already entered the Chicot." They also indicated that if these actions are not considered, EPA "should be prepared to place the entire residential and business population on a clean water supply."

The coalition stated that many of the affected residents are from relatively low or fixed income households and they are not able to replace their wells or buy water from a neighboring MUD. It stated that the cost of maintenance of the filters "might far exceed the cost of other 'fixes.'" It commented that "[w]e need immediate studies of providing a suitable drinking water while the environment is cleaned up."

In response, these comments pertain to the adequacy of the response efforts at this site, and as such are not relevant to the listing decision. However, EPA acknowledges that the application of filters to drinking water wells is a temporary action which was designed to alleviate the contamination of the

drinking water wells of these residents who are directly affected by the plume. Long-term remediation at this site has yet to be determined, and remedial alternatives will be evaluated during the RI/FS stage of the process.

2.1.3.5 Source Identification/Characterization

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, commented that the HRS documentation record at proposal indicated that the focused site inspection report identified this site as a “plume originated from unidentified sources” while TCEQ stated that the contamination originated from Bell Dry Cleaners owned by HH Lucky T and was first detected in December 2000. They stated that Bell Dry Cleaners entered a voluntary cleanup program in July 2001 but, when it learned that many wells were contaminated with tetrachloroethylene (PCE), it withdrew from the program. They asserted that the residents “west of Jones Road were notified of the problem” in April 2002 and that the plume “had an additional two years to migrate.” They commented that Bell Dry Cleaners had multiple RCRA violations, although no legal actions were taken. They asserted that “the source is well documented as Bell Dry Cleaners and should have been more thoroughly evaluated during the completion of this report [Focused Site Inspection Report].” They concluded that the residents in this area have been exposed to contaminated water during this time, and that Bell Dry Cleaners “should have been thoroughly evaluated to fully represent the seriousness of this situation.” They asserted that the HRS documentation record at proposal indicates that the source of the PCE contamination is unknown, but “Bell [Dry] Cleaners was already identified as the source in recent enforcement actions by the TCEQ.” Furthermore, Bell [Dry] Cleaners signed a consent decree acknowledging this in May 2002. They commented that previous studies by Geotech “already defined Bell [Dry] Cleaners and the shopping center for HH Lucky T as containing PCE contamination in soils and groundwater.” They stated that soil samples collected from the shopping center near Bell Dry Cleaners “contained numerous degradation chemicals (i.e., DCE, vinyl chloride, etc.)” They commented that [t]his degradation normally occurs first at the originating source” and that based on this information, Bell Dry Cleaners should be “named the major contributing location.”

The coalition commented that they “are not inferring [sic] that the Agency may be covering up for the lack of inspections and enforcement on their part or that of the TCEQ,” but that, based upon the time of operation of Bell Dry Cleaners, “this plume may have been migrating for the entire 20 years.”

Ms. Hofbauer and Mr. Hofbauer asserted that the “sources at Bell [Dry] Cleaner[‘s] former location should be removed or treated immediately to reduce further impact.”

In response, according to Section 1.1, *Definitions*, of the HRS (40 CFR 300, appendix A), a contaminated ground water plume can be evaluated as a source for HRS scoring when the plume has no identified source of contamination. According to page 23 of the HRS documentation record at proposal, this site was evaluated as a ground water plume with no identified source

because the exact source of the PCE, TCE and DCE contamination is unknown and the area of contamination remains undefined. Although previous investigations have suggested several potential source areas near the drinking water wells, adequate documentation attributing the hazardous substances to one or more of the potential source areas has not been identified based on available data. Therefore, a ground water plume with no identified source was used for HRS scoring.

Furthermore, as stated on pages 23-26 of the HRS documentation record at proposal, there are many sources that could be or have been contributing to the ground water plume. For example, as many as 19 additional dry cleaning establishments have been identified within a three-mile radius, making it difficult to attribute the contamination to any one source and to obtain individual background samples for each source. At the time of proposal, EPA did not have sufficient evidence to determine whether the contamination was attributable to Bell Dry Cleaners or any other particular source. During the RI/FS process that began on August 25, 2003, the extent of the site will be further characterized and source(s) of the contamination identified.

2.1.3.6 Ground Water Migration Pathway

Commenters raised several issues specific to the manner in which the ground water pathway was evaluated. These comments are addressed below.

2.1.3.6.1 Analytical Methodology

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, commented that the drinking water samples collected from the wells during the SI were analyzed by EPA Method 524.2 for organic drinking water analysis. They asserted that the RCRA Technical Enforcement Guidance Document (TEGD) specifies that “volatile analyses should be performed by following EPA Method 8260.” They questioned the significance of following a different method and the quality of the sample results. They stated that EPA “may not truly know the significance of the situation if the levels of contamination are lower based upon the analytical method.”

In response, regardless of which analytical method is used to analyze the samples, these comments have no effect on the site score or the listing decision for this site. EPA used an appropriate analytical method to analyze the samples used to score the Jones Road Ground Water Plume site. EPA Method 524.2, “Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry,” is an approved method for the identification and measurement of purgeable volatile organic compounds in ground water and drinking water. The method detection limit for this method varies from 0.02 ug/L to 1.6 ug/L. The SW-846 Method 8260, “Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS),” is used to determine volatile organic compounds in a variety of solid waste matrices, including aqueous sludges, caustic liquors, acid liquors, waste solvents, oily wastes, mounds, tars, fibrous wastes, polymeric emulsions, filter cakes, spent carbons, spent catalysts, soils, aqueous, and sediments. The method detection limit for this method is 5 ug/L.

EPA method 524.2 was chosen as the appropriate method for the analyses of the samples used to score the Jones Road Ground Water Plume site because of the lower and, therefore, more sensitive detection limits. This method provides analytical results that would be quantifiable at lower concentrations than those obtained using SW-846 Method 8260. EPA Method 524.2 was also chosen to determine if the contamination was below the EPA MCL for PCE in drinking water (5 ug/L).

With regard to the requirements in the RCRA Technical Enforcement Guidance Document, these requirements do not pertain to this site because it is not a RCRA facility. These comments do not affect the site score.

2.1.3.6.2 Background Locations

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, questioned whether the samples collected from Echo Spring Lane were upgradient of the contaminant plume since several wells on this road were contaminated with PCE.

The coalition commented that “diffusive dispersion can occur against an advective transport gradient,” indicating that the concentrations detected in several wells on Echo Spring Lane are not “consistent with the use of this area as up gradient for the purpose of migration pathway delineation.” It stated that background concentrations from upgradient wells “should have been determined from wells outside the plume.”

In response, for HRS purposes, the background locations are sufficient to establish a significant increase in PCE levels at this site. According to the HRS, a background sample is used to determine a background level of contamination that provides a reference point to evaluate whether or not a release of a hazardous substance from the site has occurred. According to page 67 of the HRS Guidance Manual, a background level “should reflect the concentration of the hazardous substance in the medium of concern for the environmental setting on or near a site,” and it “does not necessarily represent pre-release conditions, nor conditions in the absence of influence from source(s) at the site.” As stated on page 34 of the HRS documentation record at proposal, the background samples used to establish an observed release (GW-20, GW-50, GW-51 and GW-52) did not contain any PCE, TCE, or DCE. Therefore, they were chosen to represent background conditions at this site.

With regard to the comments that the background samples may have been collected in an area that was not upgradient of the site and that they may have been influenced by the contamination at the site, if diffusive dispersion is occurring, then the actual amount of contamination in the background samples could be lower, reinforcing the fact that the contaminated samples meet observed release criteria. Therefore, the basis for establishing an observed release at this site would not be undermined.

2.1.3.6.3 Sampling Techniques

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, commented that true ground water conditions have not been determined. They stated that the QAPP indicated that each well sampled was 150 feet deep or more and was sampled after 15 minutes of purge, indicating that this was not sufficient time to obtain a representative sample. They asserted that, based on a liberal pumping rate of 10 gpm, 150 gallons of water was removed and that, per the TEGD, “at least 3 well volumes should be removed to collect a representative sample.” They indicated that, “[g]iven the average depth of a well, that would mean between 300 to 1000 gallons (depending upon well depth and casing radius) would need to be purged to obtain a representative sample.” They questioned the accuracy of the results from these wells.

In response, the ground water conditions, while perhaps not completely investigated, are sufficiently identified for HRS scoring purposes. They are sufficient to establish an observed release and to identify actual contamination of targets which document an HRS score of greater than 28.50. As noted previously, a more thorough analysis of the extent of contamination will be performed at a different stage of the Superfund process.

Furthermore, the objective of well purging is to obtain formation water from the targeted sampling point with no alteration of water chemistry. Typical sampling procedures currently utilized by EPA and TCEQ focus on a low-flow sampling approach rather than the 3-5 well volume approach outlined in the TEGD. This low-flow approach minimizes the ground water disturbance in and around the well. However, sampling private water supply wells poses some unique problems since the well screens are typically much longer than in monitoring wells, the pump speed and production rate cannot be controlled at the surface, the well is designed to maximize the production of water as opposed to sampling a specific interval, and a sampling port at the surface may not always be available at the well head. Because of these factors, purging and sampling a private supply well is less precise than for a monitoring well. The objective of purging a private well for 15 minutes is to produce sufficient water to clear the existing water lines prior to the sampling point while minimizing the disturbance in the aquifer. This sampling procedure represents a compromise between collecting a representative sample and the physical limitations of a private well. All samples used to document the score were collected according to the EPA-approved State QAPP. Furthermore, the HRS is a screening tool, and the sampling activities used to score this site are consistent with the HRS. The HRS requires that the background and release samples be collected using the same sampling and analysis methods. These samples should be collected from the same aquifer, at the same time, under the same physical conditions (e.g., meteorological conditions), and the same environmental setting (e.g., topography). The sampling procedures used for the collection of these samples were sufficient for HRS purposes of establishing an observed release. The plume will be further characterized at a later stage of the Superfund process. Therefore, these comments do not affect the HRS site score.

2.1.3.7 Additional Pathways

The coalition, along with Ms. Hofbauer and Mr. Hofbauer, commented that EPA did not evaluate the surface water migration pathway, soil exposure pathway or the air migration pathway. They indicated that “[i]t is known that the highest concentrations of contaminants are found in the soils in and around Bell [Dry] Cleaners” which is in a large public shopping area with restaurants and businesses. “A large transient population on a daily basis frequents the shopping center” and, with the construction or new businesses and the renovations of existing business, these individuals along with the employees of the businesses may be exposed to the contamination. The coalition, along with Ms. Hofbauer and Mr. Hofbauer, commented that any residents in the area may be exposed to the contamination when there are any disturbances to the soil (e.g., foundations, pool installation). They disagree with EPA’s assessment that evaluating the soil exposure pathway “would not significantly affect the site score.” They indicated that the “significance of this exposure should certainly be considered and would likely raise the HRS score” and that the “need for immediacy of action on the part of the Agency based upon this elevated score would be clearly accentuated.”

A private citizen commented that the surface water migration pathway was not evaluated and that the “[s]tormwater is drained off through open drainage ditches.” This citizen indicated that water flows in a

southerly direction and that there are several MUDs along with wells operated by the city of Houston to the south.

In response, EPA agrees that there may be other routes of exposure at this site. However, the HRS does not require scoring all four pathways, if scoring those pathways does not change the listing decision. For some sites, data for scoring a pathway are unavailable, and obtaining these data would be time-consuming or costly. In other cases, data for scoring some pathways are available, but will only have a minimal effect on the site score. In still other cases, data on other pathways could substantially add to a site score, but would not affect the listing decision. The HRS is a screening model that uses limited resources to determine whether a site should be placed on the NPL for possible Superfund response. A subsequent stage of the Superfund process, the RI, characterizes conditions and hazards at the site more comprehensively.

To the extent practicable, EPA attempts to score all pathways that pose significant threats. If the contribution of a pathway is minimal to the overall score, in general, that pathway will not be scored. In such cases, the HRS documentation record may include a brief qualitative discussion to present a more complete picture of the conditions and hazards at the site. As a matter of policy, EPA does not delay listing a site to incorporate new data or score new pathways if the listing decision is not affected.

EPA must balance the need to fully characterize a site with the limited resources available to collect and analyze site data. For this reason, the EPA generally will not score additional pathways upon receiving new data as long as the site still meets the HRS cutoff score. However, any additional data characterizing site conditions could provide useful information during the RI.

The HRS is intended to be a "rough list" of prioritized hazardous sites; a "first step in a process--nothing more, nothing less" Eagle Picher Indus. v. EPA, 759 F.2d 922, 932 (D.C. Cir. 1985) (Eagle Picher II). EPA would like to investigate each possible site completely and thoroughly prior to evaluating them for proposal for NPL, but it must reconcile the need for certainty before action with the need for inexpensive, expeditious procedures to identify potentially hazardous sites. The courts have found EPA's approach to solving this conundrum to be "reasonable and fully in accord with Congressional intent." "Eagle Picher Industries, Inc." v. EPA, (759 F.2d 905 (D.C. Cir. 1985) Eagle Picher I).

2.1.4 Conclusion

The original score for the Jones Road Ground Water Plume site was 46.50. Based on the above response to comments, the site score remains unchanged. The final score for the Jones Road Ground Water Plume site is:

Ground Water	93.00
Surface Water	Not Scored
Soil Exposure	Not Scored
Air Pathway	Not Scored
HRS Site Score	46.50

REGION 7

3.1 Madison County Mines, Fredericktown, Missouri

3.1.1 List of Commenters/Correspondents

SFUND-2003-0009-0109	Comment dated June 17, 2003 from Lovell Parish, Madison County, Missouri
SFUND-2003-0009-0128	Comments dated June 5, 2003 from Jerry L. Williams, Fredericktown, Missouri
SFUND-2003-0009-0134	Comments dated June 30, 2003 from Roger Walker of Armstrong Teasdale LLP on the behalf of Anschutz Mining Corporation
SFUND-2003-0091-0093	Correspondence dated March 18, 2003 from Honorable Bob Holden, Governor of Missouri

3.1.2 Site Summary

The Madison County Mines site is located in the Old Lead Belt area of southeastern Missouri in the vicinity of Fredericktown, Madison County, Missouri, approximately 80 miles south of St. Louis. The site is being proposed to the NPL because of the presence of metal contamination, including lead, in residential soil and within nearby surface water bodies, the Little St. Francis River and its tributaries. Lead was detected in residential yards at levels as high as 10,000 milligrams per kilogram (mg/kg) or more than 70 times that of background levels. The primary sources of metal contamination are large uncontained tailings and chat piles associated with local historical operations that mined for lead, copper, cobalt, nickel, iron, zinc, silver, and pyrite. Some of these mining operations date back to the 1840s.

Metal contaminants from tailings piles migrated through various routes to residential soil and nearby surface water bodies. In 1977, a tailings pond dam broke and released accumulated tailings into tributaries of the Little St. Francis River. In addition, several tailings piles have spilled over directly into the Little St. Francis River and its tributaries. For years, residents of Fredericktown have used tailings from piles as fill for yards, gardens, roads, and driveways. This practice is likely responsible for much of the residential soil contamination observed at the site. Other modes of contaminant deposition in residential yards include flooding of contaminated water bodies and emissions from nearby smelters.

A number of studies and investigations have been undertaken at the site since 1983. Collectively, these have revealed metals contamination in local ground water, surface water and sediments associated with the Little St. Francis River and its tributaries, residential soil, and air. Ground water samples collected from onsite monitoring wells and piezometers revealed arsenic, copper, lead, and nickel concentrations above EPA's Maximum Contaminant Levels (MCLs) and greater than three times background concentrations. Surface water sampling revealed concentrations of arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc above Ambient Water Quality Criteria (AWQC). Specifically, lead was detected in surface water up to 12 micrograms per liter ($\mu\text{g/L}$) and sediment up to 11,000 mg/kg. Soil

sampling in residential yards revealed lead at concentrations as high as 10,000 mg/kg. Air sampling revealed filter concentrations of arsenic, cobalt, copper, lead, and nickel at greater than three times background concentrations.

Metals contamination from the site has impacted the Little St. Francis River, which is an active fishery with documented wetlands and habitats used by state endangered species. In addition, a number of residential properties have also been impacted. EPA conducted soil screening at 215 residential properties in Fredericktown, Missouri, and identified 92 of these properties with soil lead concentrations above the soil lead hazard standard of 400 mg/kg. EPA observed the presence of tailings in driveways, sidewalks, or elsewhere on 42 of these 92 residential properties and approximately 200 other residential properties in Fredericktown.

3.1.3 Summary of Comments/Correspondence

Four commenters submitted comments on placing the Madison County Mines site on the NPL. Governor Bob Holden of Missouri and Mr. Lovell Parish supported the listing. Mr. Jerry L. Williams and Mr. Roger Walker of Armstrong Teasdale LLP writing on behalf of Anschutz Mining Corporation (herein referred to as Anschutz Mining) refuted the listing and requested the site be removed from the NPL.

Governor Bob Holden stated that he concurred that EPA should proceed with actions leading to inclusion of Madison County Mines on the NPL. He concluded that further investigation of environmental contamination and possible cleanup actions are warranted at the Madison County Mines site for protection of public health, particularly children's health, and the environment.

Mr. Lovell Parish stated that he has worked with cleanup and monitoring of several hazardous waste sites in Montana and Wyoming, and it is his experience that only with NPL funding can cleanup be assured. Mr. Parish also commented on young children playing in crushed mine tailings in driveways and yards and on the need for more extensive ground water investigation.

Mr. Jerry Williams stated that EPA should remove Madison County Mines from the NPL until it learns about the area. Overall, he contended that high soil lead levels should be expected in the largest lead producing area of the world. He added that high soil lead levels are expected because there is still a large amount of lead ore close to the surface. Mr. Williams commented that all activity involving the waste of taxpayers money on lead testing and removal should be stopped until EPA sets parameters which define the hazards and the levels of lead poisoning that are considered dangerous.

Anschutz Mining Corporation commented that the Madison County Mines site should be kept narrowly focused on the residential properties of Fredericktown. It stated that it had recently signed an Administrative Order on Consent to do a Removal Site Investigation at portions of Operable Unit 77 encompassing areas that became contaminated as a result of a tailings dam collapse in 1977. It commented that it has "virtually concluded negotiations" with EPA on a separate AOC for Operating Unit 2 "in which we have agreed to perform a Characterization Study and Baseline Risk Assessment . . . for Anschutz properties, including tailings piles and impoundments, and other areas within the vicinity of Anschutz property that have been impacted by mine waste." Anschutz concluded that it believes that Operable Unit 2 "should be kept outside the proposed NPL.

3.1.3.1 Support for Listing

Governor Bob Holden of Missouri stated that EPA should proceed with actions leading to inclusion of Madison County Mines on the NPL. He stated that EPA has conducted sampling investigations at the site indicating:

- contamination of soil, surface water, and sediment with lead and other heavy metals resulting from historic mining, ore processing, and waste disposal in and near Fredericktown, Missouri;
- possible adverse health effects in children in the area from exposure to mining related contamination; and
- additional investigations of ecological exposure risks are needed.

Governor Bob Holden stated that it is his understanding that additional investigations and cleanup may not be possible unless the site is listed on the NPL and enters the Superfund remedial program.

Mr. Lovell Parish stated that he has worked with cleanup and monitoring of several hazardous waste sites in Montana and Wyoming, and it is his experience that only with NPL funding can cleanup be assured. Mr. Parrish commented that exposure to lead from crushed mine tailings is definitely a problem in Madison County as has been proven by the large number of young children who have elevated blood lead levels.

In response, the State of Missouri and the U.S. EPA concur on the placement of Madison County Mines site on the NPL. Although a governor's letter concurring with listing is not required, present EPA policy is generally to request a concurrence from the State to list a site on the NPL. In accordance with this EPA policy, EPA sought and received a letter from Governor Bob Holden of Missouri in support of this listing.

Listing makes a site eligible for remedial action funding under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCA), and EPA will examine the site to determine what response, if any, is appropriate. Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and upon more detailed investigation may not be necessary at all in some cases. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, state priorities, further site investigation, other response alternatives, and other factors as appropriate.

3.1.3.2 Extent of Site

Anschutz Mining commented that, "[w]hile we acknowledge that EPA does not utilize the listing process to precisely describe or define in geographical terms the NPL site or associated releases," they believe that EPA "should maintain a precise and separate focus apart from other long-standing EPA-directed activities within the same area" that involve Anschutz Mining Corporation and others. Anschutz Mining stated that it and National Lead (NL) Industries recently signed an Administrative Order on Consent for a Removal Site Investigation (AOC) at portions of Operable Unit 77. It added that the cleanup work to be

performed under this AOC is limited to the yards and properties covering approximately three houses on either side of various creeks (Toller Creek, Saline Creek, and Little St. Francis River) ‘where mine tailings from the dam failure may have come to be located.’ Anschutz commented that it and NL Industries “have virtually concluded negotiations with EPA on a separate Administrative Order on Consent for Operating Unit 2 (AOC-OU2)” in which they have “agreed to perform a Characterization Study and Baseline Risk Assessment for Anschutz properties, including tailings piles and impoundments, and other areas within the vicinity of Anschutz property that have been impacted by mine waste.”

Anschutz Mining also commented that, while there is some overlap at the site with respect to the tailings dam breach and flood in 1977, the Characterization Study for OU2 is both distinct and more comprehensive than activities at the proposed NPL listing. It contended that it and NL Industries have worked diligently with EPA Region VII to perform all required tasks, and they continue to negotiate with EPA to finalize the AOC for OU2. Anschutz Mining concluded that the Madison Mine site should be narrowly focused on the residential properties of Fredericktown.

In response, as identified in the HRS documentation record at proposal, the Madison County Mines site was scored based on 4 sources caused by related mining activities and the zones of surface water contamination where contamination has come to be located due to migration of hazardous substances from the sources. EPA disagrees with the commenters suggestion that, because EPA is negotiating an AOC with commenters concerning some of the sources evaluated as part of the listing of the site, the site should be limited to a “precise and separate focus” on the residential properties in Fredericktown. As noted by the commenter, the 4 sources and the zones of surface water contamination do not define the boundaries of the NPL site. EPA does not utilize the listing process to precisely describe or define in geographical terms the NPL site or associated releases. As indicted in Section 1.1 of the HRS, *Definitions*, a site is “[a]rea(s) where a hazardous substance has been deposited, stored, disposed or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between sources.” A source is “[a]ny area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated by migration of a hazardous substance.”

The Anschutz Tailings Piles A through E and the Chat Piles¹ that are located on the Anschutz property are appropriately considered part of the Madison County Mines site and were identified as Source 1 in the HRS documentation record as proposed (see pages 16 through 22 of the HRS documentation record as proposed). The Anschutz Tailings Piles consist of approximately 4,969,000 tons of tailings containing significant concentrations of antimony (up to 9.4 mg/kg), arsenic (up to 76 J mg/kg), cadmium (up to 5.1 mg/kg), cobalt (up to 1,200 J mg/kg), copper (up to 4,300 mg/kg), lead (up to 4,700 mg/kg), mercury (up to 0.48 mg/kg), nickel (up to 4,100 J mg/kg), silver (up to 8.7 mg/kg), and thallium (up to 68 J mg/kg) (see pages 17 through 19 of the HRS documentation record as proposed). These tailings were deposited directly on the ground less than ½ mile southeast of Fredericktown, and, although several of the piles are partially vegetated, there are no containment structures associated with any of the piles that would prevent the hazardous substances contained in the piles from being released and impacting human health and the environment.

¹The tailings and chat piles identified as Source 1 in the HRS documentation record at proposal correspond roughly to the area encompassing Operable Unit 2 noted by the commenter.

For HRS scoring purposes, the Madison County Mines site also includes the Conrad tailings (Source 2) and the Pinecastle Estates chat (Source 3) because they are similarly uncontained and threaten the same watershed.

Source 4 in the HRS documentation record at proposal consisted of 20 residences at which concentrations of several metals in yards and driveways significantly exceeded background levels, including antimony, cadmium, cobalt, copper, lead, nickel, silver, and zinc. As noted on page 4 of the HRS documentation record as proposed, 92 of 215 properties randomly screened during the Removal Assessment were found to have lead concentrations above the EPA preliminary remediation goal, and at least 240 residential properties had visible chat. These and other properties will be further investigated during the remedial investigation. It should be noted that these properties are not the same as those properties identified by the commenter as becoming contaminated as a result of a dam failure.

Even if the Anschutz Tailings Piles are to be addressed by an AOC agreement, this does not preclude the waste from being included as part of the Madison County Mines site; neither does NPL listing preclude Anschutz Mining from proceeding with the Characterization Study and Baseline Risk Assessment for Anschutz properties. PRPs may undertake investigations and/or response actions under EPA supervision and pursuant to appropriate agreements with governmental authorities (under enforcement authorities of CERCLA or those of other statutes). The listing process does not encumber or preclude PRPs from entering into these agreements. EPA has entered into many such agreements between proposal and promulgation. EPA will continue to work with PRPs to effect the most appropriate approach to remediation at this site.

3.1.3.3 Lead Levels

Mr. Williams commented that high soil lead levels are expected because there is still a large amount of lead ore close to the surface. He stated that he lives in an area that was once called the ‘Golden Vein’ because of the large amount of lead ore near the surface.

Mr. Williams requested that “high” be defined. He stated that the EPA has not defined a useable figure of what lead poisoning is other than high levels in blood samples. He stated that without a quantitative term, he does not know what is harmful. Mr. Williams requested that all activity involving lead testing and removal be stopped until EPA sets parameters that define the hazards and the levels of lead poisoning that are considered dangerous.

In response, the areas of the site identified as having elevated levels of lead and other contaminants in the HRS documentation record at proposal were the four source areas, the areas of observed contamination, and observed releases to surface waters adjacent to sources. Table 2-3 of the HRS, *Observed Release Criteria for Chemical Analysis*, explains that, for HRS purposes, when establishing observed releases and areas of observed contamination, “significance” above background levels is established when the concentration of a hazardous substance is three times or more above the background level for that hazardous substance. Similarly, while not specifically required in the HRS, to identify the lead and other contaminants that were elevated in the sources, EPA also compared lead levels in the sources with those in background soil samples in the vicinity of the site and only considered contaminants to be associated with the source if they met the same criteria.

Because, as noted by the commenter, lead is naturally present in the environment in the area of Madison County Mines, EPA did consider the possibility that the high lead levels could be natural. For this reason, three surface soil samples were collected in August 2002 in the vicinity of the site to establish a background lead level for the identification of lead in sources and to establish areas of observed contamination.

As indicated in the Quick Reference Fact Sheet, *Evaluating Ubiquitous and Naturally Occurring Substances in a Source Under the Hazard Ranking System* (December 1997), the background level provides “a defensible reference point that can be used to evaluate whether or not a specific hazardous substance exists within a source in a concentration greater than that found in the local environment.” As stated on page 69 of the HRS documentation record as proposed, “[t]he highest concentration of each hazardous substance detected in the three background samples was selected as the background concentration for purposes of comparison.” The highest concentration of lead detected in the three background samples is 140 mg/kg, detected in sample SS-BKGRD-002.

However, EPA did not rely solely on these background samples to identify that the elevated lead levels were not naturally occurring. Other information also supports this conclusion. Historically, chat from local mining wastes has been used as fill for yards, gardens, roads, and driveways in the area of the site. In October 2002, 20 surface soil samples were collected from chat driveways of 20 residences in Fredericktown, Missouri. Of the 20 residences sampled, 19 residences had soil lead concentrations in the range of 510 mg/kg to 10,000 mg/kg; up to 71 times the highest background level for lead in the area. This clearly supports EPA’s position that the lead levels in the sources evaluated are not due to natural causes.

Further, the very activity of mining alters the environment in such a way as to facilitate the mobilization of metals.² Although the lead ore is naturally present in the area, the process of removing and refining the ore generates broken waste rock containing ore, fine tailings, and larger-grained chat. These mining wastes are exposed to natural processes (oxygenation and rain) that create a geochemical environment conducive to the dissolution of the lead from the waste rock and/or tailings and the generation of acid mine drainage. Therefore, although lead ore is naturally present in the area, such concentrations of lead as those detected on the properties in Fredericktown, Missouri, would likely not be present without the mining activities in the area.

Additionally, in 2002, EPA screened residential yards and driveways in Fredericktown for lead and other metals during a Removal Assessment of the Madison County Mines site. EPA divided Fredericktown into eight sections and randomly selected residential properties within each section to be screened for lead in soil. As stated on page 73 of the HRS documentation record as proposed, 92 of the 215 properties screened exhibited lead concentrations above the EPA Region 9 preliminary remediation goal (PRG) for lead of 400 mg/kg (see also page 15 of Reference 6 to the HRS documentation record as proposed). Of these 92 residences, 42 had driveways made of chat, a common road construction material in the Old Lead Belt. EPA observed nearly 200 additional residences with visible chat or tailings on their property.

²The lead ore to which Mr. Williams refers contains the compound lead sulfide which is a very chemically stable, naturally occurring compound. The lead in lead sulfide is not very bioavailable (i.e., cannot be easily taken up by the body). However, after the lead ore is mined, processed, and exposed to rain, sunlight, temperature fluctuations, etc., the lead sulfide is transformed into lead sulfate, lead carbonate, lead oxide, or other lead forms. The lead in these compounds is very bioavailable and can accumulate in brain cells, bone marrow, and organs where it can cause adverse health effects, especially in very young children, older adults, and pregnant women.

However, these additional residences were not included in EPA's random screening (pages 69 and 73 of the HRS documentation record as proposed). Although these properties were not included in EPA's random screening, they are not precluded from being considered part of the site if subsequent investigations indicate similarly high concentrations.)

Regarding Mr. Williams' inquiry as to the definition "high levels of lead" and his request that all lead testing and removal activity be stopped until the dangerous levels of lead are defined, it should be noted that an HRS evaluation is not equivalent to a risk assessment. When Congress enacted the Superfund Amendments and Reauthorization Act of 1986 (SARA, Pub. L. 99-499), it required EPA to assure "to the maximum extent feasible, that the hazard ranking system accurately assesses the relative degree of risk to human health and the environment posed by sites and facilities subject to review." In the Conference Report on SARA, Congress stated:

This standard does not, however, require the Hazard Ranking System to be equivalent to detailed risk assessments, quantitative or qualitative, such as might be performed as part of remedial actions. The standard requires the Hazard Ranking System to rank sites as accurately as the Agency believes is feasible using information from preliminary assessments and site inspections. . . This provision is intended to ensure that the Hazard Ranking System performs with a degree of accuracy appropriate to its role in expeditiously identifying candidates for response actions.

As mentioned above, for HRS purposes then, "significant" levels are defined as hazardous substance concentrations that are three times the established site-specific background level for that hazardous substance (see Section 2.3 of the HRS, *Likelihood of release*). A more precise measurement of risk is established during a more formal risk assessment usually conducted as part of the remedial investigation that may follow NPL listing.

With specific regard to hazards posed by lead, while as noted above, it is not necessary for HRS purposes to establish that releases are above health based levels to justify placing a site on the NPL, EPA has established policy addressing what high lead levels are. There is broad consensus in the scientific community that exposures to lead can impact numerous human functions including organ system toxicity; inhibition of the process of developing red blood cells; changes in serum vitamin D levels and cardiovascular, cerebrovascular, hypertension, renal, reproductive, neurological, and neurobehavioral functions, including mental and physical development of infants and children; as well as genotoxicity and carcinogenicity. EPA has issued its final rule on lead and identification of dangerous levels of lead and has established national guidelines for lead hazards in 40 CFR Part 745 (dated January 5, 2001). In discussing the soil lead standards for bare residential soil, EPA established a hazards standard of 400 ppm by weight in children's play areas and an average of 1,200 ppm in bare soil in the remainder of the yard. In establishing the soil lead hazards, EPA states:

Property owners and other decision makers should implement effective measures to reduce or prevent children's exposure to lead in soil that exceeds these levels. . . .EPA recommends that organizations and individuals consider some action in certain areas even where levels in bare soils are below the hazard standard, particularly if there is a concern that children 6 years and under might spend substantial time in such areas, or if there is a concern that the bare soil in such areas may contribute to lead levels in the dwelling or in the play area. (40 CFR Part 745, January 5, 2001).

http://www.epa.gov/opptintr/lead/403_final.pdf

As stated above, the lowest soil lead concentration in the 20 residences presented in the HRS documentation record was 510 mg/kg, which is well over the soil lead hazard standard of 400 ppm (or 400 mg/kg).

With regard to specific blood lead levels of concern, EPA also notes that elevated blood lead levels in young children have been defined by the Centers for Disease Control and Prevention (CDC) as blood lead levels greater than the CDC recommended level of 10 micrograms of lead per deciliter of blood (10 µg/dL). (<http://www.cdc.gov/nceh/lead/factsheets/childhoodlead.htm>). This standard has been widely accepted by various government agencies (EPA, CDC, and Housing and Urban Development (HUD)) in the process of identifying and eliminating lead hazards to protect young children. In fact, as explained in the documents supporting the 2001 lead standards discussed above, the soil levels in that rule are based on the amount of lead in soil that a person would need to be exposed to result in blood lead levels considered harmful.

3.1.3.4 Additional Exposure Pathways

Mr. Parish commented that ground water pollution caused by rising mine waters is now becoming a problem along the lower Goose Creek area. He said that contaminated ground water is showing up in local wells and will become worse as the area becomes more developed and people unwittingly drill into the old underground mine workings to utilize the water for domestic wells. He also commented that the ground water investigation should not be limited to the mine in the vicinity of Goose Creek, but should extend to include survey and testing of wells and springs over other surrounding mine workings, such as those near Mine La Motte and Catherine Place.

In response, available data indicate that there is a release of several metals to ground water at the Madison County Mines site, including barium, cobalt, copper, iron, lead, nickel, and zinc. In addition, arsenic, lead, and nickel were detected in ground water at concentrations exceeding regulatory levels (see pages 5 and 17 of Reference 5 to the HRS documentation record as proposed). Although the ground water pathway was not scored as part of the HRS evaluation, this does not indicate that there is no threat or that it may not be evaluated at a subsequent stage of the Superfund process, the Remedial Investigation (RI), at which time the conditions and hazards at the site are characterized more fully.

To the extent practicable, when doing an HRS evaluation of a site, EPA scores all pathways that contribute significantly to the overall HRS site score. If the contribution of a pathway is minimal to the overall HRS score, in general, that pathway may not be included in the HRS scoring. In these cases, the HRS documentation record may include a brief qualitative discussion to present a more complete picture of the conditions and hazards at the site. As a matter of policy, EPA does not delay listing a site to incorporate new data or score additional pathways, if the listing decision is not affected.

EPA must balance the need to fully characterize a site with the limited resources available to collect and analyze site data. For this reason, the EPA generally will not score additional pathways upon receiving new data as long as the site still meets the HRS cutoff score. However, any additional data characterizing site conditions could provide useful information during the RI.

3.1.4 Conclusion

The original HRS score for this site was 58.41. Based on the above response to comments, the score remains unchanged. The final scores for Madison County Mines are:

Ground Water:	Not Scored
Surface Water:	100.00
Soil Exposure:	60.40
Air:	Not Scored
HRS Score:	58.41

REGION 10

4.1 Harbor Oil, Portland, Oregon

4.1.1 List of Commenters/Correspondents

SFUND-2002-0001-0087	Comment dated September 20, 2002 from W.L. Briggs, President of Energy & Materials Recovery, Inc.
SFUND-2002-0001-0090	Comments dated October 24, 2002 and October 31, 2002 prepared by David G. Coles of Coles Environmental Consulting, Inc. and Christopher Harris, Attorney, representing Energy & Materials Recovery, Inc.
SFUND-2002-0001-0085	Correspondence dated October 12, 20001 from Honorable John Kitzhaber, M.D., Governor of Oregon

4.1.2 Site Summary

Harbor Oil is a waste oil reprocessing facility located on approximately 4.2 acres in an industrial area of Portland, Oregon. Site operations began in 1961. The site formerly also operated as a tank truck cleaning facility. In March 1974, there was a major spill or release of waste oil from on site storage tanks, which resulted in a fish kill in Force Lake. Following the spill, the work area at the Harbor Oil site was described by Oregon Department of Environmental Quality (ODEQ) staff as a mass of oil-soaked mud. ODEQ staff found Force Lake to be covered by a thin film of oil, and a thicker accumulation of oil, both fresh and decomposed, which had accumulated along the shorelines. In addition, in October 1979, a severe fire destroyed the facility and melted/ruptured five 20,000-gallon aboveground used oil tanks. The incident caused large volumes of used oils and smaller volumes of waste paints to flow west and south across the site, into the wetlands that border the site and Force Lake.

In 1980, following the fire, the facility was rebuilt and a new tank farm was constructed. Currently, the petroleum recovery process tanks consist of a 4,000-gallon diesel fuel storage tank, six 20,000-gallon heated storage tanks, six 20,000-gallon cold storage tanks, a 205,000-gallon tank, and a 320,000-gallon cold storage tank. These tanks hold used petroleum products in varying stages of recovery.

Waste oils received at the facility are first transferred into heated tanks for dehydration, distillation, and blending. Following heat processing, the blended oils flow through an oil/water separator. The separated oils are transferred into settling tanks equipped with filters. The separated water is piped into a surge tank. Processed oils are transferred into storage tanks. Three on-site sumps collect surface water from general runoff and divert it to an on-site oil/water separator. Treated stormwater from the oil/water separator is discharged into the wetlands west and south of the site via a permitted outfall located in the southwest corner of the site. An earthen dike installed in 1980 also surrounds the south and west sides of the site to direct surface water runoff to the collection sumps.

In July and August 2000, consultants for the EPA conducted a Preliminary Assessment/Site Inspection at the facility. Historical documentation, sampling, and analytical results document the presence of several hazardous substances on site, including volatile organic compounds, semi-volatile organic compounds, metals, pesticides, and polychlorinated biphenyls. Contaminated soil was documented as a source of contamination.

The 15-mile target distance limit (TDL) for this site begins at a permitted outfall which is located in the wetlands west of the site and continues south for approximately 300 feet through the wetlands to Force Lake, and ends at the southern shore of this lake, a distance of approximately 0.2 miles. During most of the year, the lake is filled by springs and seeps. Drainage from Force Lake passes through numerous culverts and ultimately enters the Columbia Slough.

Force Lake supports recreational fishing activities. A large palustrine, emergent, seasonally flooded wetland having a perimeter of approximately 1.3 miles is located immediately west and south of the site.

4.1.3 Summary of Comments/Correspondence

Four commenters submitted comments and/or correspondence on placing Harbor Oil on the NPL. Governor John A. Kitzhaber supported the listing of Harbor Oil. W. L. Briggs, President of Energy & Materials Recovery, Inc. [EMRI] does not support listing this site on the NPL, but rather, would like to discuss a brownfields solution in which a productive business operation and cleanup can continue. According to Mr. Briggs, it may be in the best interest of EMRI to discontinue operation at the site and allow the site to become an orphan site. He added that listing is not likely to advance any cost effective remediation strategy. Christopher Harris and David G. Coles of Coles Environmental Consulting, Inc., writing on the behalf of EMRI, provided comments against the listing of Harbor Oil on the NPL. Coles Environmental Consulting, Inc., stated that some of the key decisions relied on by EPA to list the site are inadequately supported or are inaccurate, and that the HRS scoring calculations cannot be replicated. In this support document, comments submitted by Mr. W. L. Briggs, Mr. Christopher Harris, and Mr. David G. Coles on behalf of EMRI will be referred to as comments submitted by EMRI.

4.1.3.1 Support for Listing

Governor John A. Kitzhaber, M.D., commented that the cleanup of Superfund sites benefits everyone in the state. He concurred with EPA's proposal to add Harbor Oil to the NPL. He added that EPA and the Oregon Department of Environmental Quality (DEQ) have evaluated the options to address environmental concerns at the Harbor Oil site and have concluded that the best option to clean up the site is to pursue the process to add the site to the NPL. He listed the following factors as influencing this decision:

- The site owners and former operator have no known assets and are no longer in business.
- The facility has a long history of operations involving waste oil, other petroleum products, and waste water containing toxic and mobile chlorinated solvents.

- DEQ has a long and difficult compliance history, involving both civil and criminal actions, against the current operator of Harbor Oil for his operations at a nearby facility, Fuel Processors (Energy and Material Recovery) [sic]. The current operator has refused to pay any of DEQ's accrued oversight charges for the remedial investigation at the Fuel Processors site and has stopped the investigation under claims of inability to pay.

In response, the State of Oregon and the U.S. EPA concur on the placement of Harbor Oil on the NPL. Although a governor's letter concurring with listing is not required, present EPA policy is generally to request a concurrence from the State to list a site on the NPL. In accordance with this EPA policy, EPA sought and received a letter from Governor John Kitzhaber, M.D., of Oregon in support of this listing.

Listing makes a site eligible for remedial action funding under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and EPA will examine the site to determine what response, if any, is appropriate. Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and upon more detailed investigation may not be necessary at all in some cases. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, state priorities, further site investigation, other response alternatives, and other factors as appropriate.

4.1.3.2 Sufficiency of Comment Period

EMRI commented that it was unable to reconstruct EPA's scoring effort within the sixty days allocated for comments, between the date of proposed listing and the close of the comment period, because of the complexity of the HRS scoring process. EMRI added that it was not practical for EMRI to work out the entire calculation process and then evaluate the sensitivity of various EPA assumptions on the final score.

In response, as explained in the Federal Register notice announcing the proposal of this site for the NPL (67 FR 56794, September 5, 2002), consistent with CERCLA and the Administrative Procedure Act, EPA has an orderly procedure for placing sites on the NPL. This process encourages and relies on the participation of the public, including potentially responsible parties. This opportunity for public comment occurs during the 60-day period that follows a site proposal, which for this site ended on November 4, 2002. During this period, EMRI could have submitted a request for an extension to the comment period, but did not, nor did it do so as part of its written comments, which were submitted on October 24 and October 31, 2002. Therefore, EPA did not grant an extension to the comment period. This comment has no effect on the decision to place this site on the NPL.

4.1.3.3 Deferral to Brownfields

EMRI stated that it would like to discuss a brownfields solution in which a productive business operation and cleanup can continue. EMRI commented that Harbor Oil operated as a used oil recycling facility for many years, and, as a competitor of Harbor Oil, EMRI was aware that the facility was badly managed. EMRI added that it recognized the commercial value of the location if the property could be cleaned up. EMRI said that it acquired the right to operate Harbor Oil's used oil processing activities at the site and commenced cleanup of the site; to date, EMRI has invested \$600,000 on cleanup, safety improvements, environmental compliance, and improvements at the site.

EMRI asserted that it has either obtained or secured compliance with various environmental permits that are necessary to operate the site, and, consequently, the Oregon Department of Environmental Quality (DEQ) has formally recognized that Harbor Oil, under the management of EMRI, is in compliance with all applicable environmental regulations. EMRI added that the funds it can dedicate to clean up and bring the site into compliance will be jeopardized if the site is placed on the NPL. According to EMRI, customers will have reason to avoid allowing their oil to be processed at the Superfund site; EMRI does not own the site and has not contributed to the release of hazardous substances at the site; and it may be in the best interest of EMRI to discontinue operation at the site and allow the site to become an orphan site. EMRI added that listing is not likely to advance any cost-effective remediation strategy.

EMRI stated that a brownfields solution is likely to be cost-effective from the standpoint of the taxpayers because many of the generators that contributed to the site, including a major PCB generator, are government agencies. It also added that, because the owner of the site is insolvent, an EPA decision to postpone inclusion of the site on the NPL and instead initiate discussions with the generators to facilitate an expeditious cleanup would appear to be the most sensible and pragmatic approach.

In response, it is inappropriate at this time to defer this site to a brownfields program. This site does not meet the general criteria for deferral to State programs (such as State Brownfields programs)¹ that are set out in EPA's policy on deferral of NPL listing. As explained in OSWER Directive 9375.6-11 (EPA/540/F-95/002, PB95-963223, May 3, 1995), titled *Guidance on Defferral of NPL Listing Determinations While States Oversee Response Actions*, generally, EPA should not defer a site, to a state, unless the state requests that it be deferred. Oregon DEQ has requested that Harbor Oil be listed on the NPL. Also, Governor John Kitzhaber, M.D., of Oregon has not requested that the site listing be delayed or considered for brownfields; rather, he supports the placement of the Harbor Oil site on the NPL. In a letter dated October 12, 2001, from Governor John Kitzhaber, M.D., to EPA Administrator Christine Todd Whitman, the Governor stated:

EPA and Oregon's Department of Environmental Quality (DEQ) have evaluated the options available to address environmental concerns at the Harbor Oil facility and have concluded that the best option to clean up the site is to pursue the process to add the site to the National Priorities List (NPL). This conclusion is based on several factors. First, the site owners and former operators, Harbor Oil Inc., have no known assets and are no longer in business. Second, the facility has a long history of operations involving waste oil, other petroleum products, and wastewaters containing a toxic and chlorinated solvent. Finally, DEQ has a long and difficult compliance history, involving both civil and criminal actions, against the current operator for his operations at a nearby Fuel Processors (Energy Material and Recovery) [sic] facility. The current operator has refused to pay any of DEQ's accrued oversight charges for remedial investigation at the Fuel Processors site, and stopped the investigation under a claim of inability to pay. Based on these, I concur with EPA's proposal to add Harbor Oil to the NPL.

¹The deferral provisions of CERCLA Section 105(h) are not applicable because (1) there is no request from the State to defer the site to it; (2) the State is not conducting response actions at the site; and (3) the site does not meet the definition of an eligible response site under this statute (<http://www.epa.gov/swerosps/bf/pdf/hr2869.pdf>).

Hence, there was no request from the State that the site be addressed by the State under a state brownfields program.

Regarding EMRI's comment that listing Harbor Oil on the NPL may give EMRI incentive to abandon the site (and thus jeopardize funds available to clean up the site) because listing will cause its customers to avoid using the Harbor Oil facility, this comment does not undermine EPA's basis for adding the site to the NPL. Any stigma or liability concerns that may cause customers to avoid using the facility may exist whether or not the site is listed on the NPL. Liability does not depend on NPL listing. EPA can carry out removal actions at non-NPL sites and can seek cost-recovery from liable parties. Any stigma associated with Harbor Oil may exist even without NPL listing given that site activities have caused areas of soil to become contaminated and a wetland and a fishery to be impacted by a release of hazardous substances. The NPL serves primarily as an informational list. Inclusion of a site or facility on the list does not in itself reflect a judgment of the activities of its owner or operator, but rather reflects EPA's judgment that a significant release or threat of release has occurred, and that the site is a priority for further investigation under CERCLA. Furthermore, the focus of the CERCLA program is to identify and, where necessary, address hazardous substances releases that may pose a threat to health or the environment.

EPA is adding the Harbor Oil site on the NPL because the threat posed by the site, reflected in HRS site score, was sufficient to warrant listing and because hazardous substances which are documented to bioaccumulate in fish tissue have migrated from the site into Force Lake and the wetlands on Force Lake. Force Lake is a human food chain fishery and the wetlands on Force Lake are important habitats for many aquatic, avian, and terrestrial species. See Section 4.1.3.9.3 of this support document for further information on the fishery. CERCLA Section 105 (a)(8)(A) required the establishment of criteria for determining priorities among releases or threatened releases; the Agency listed three methods in the NCP by which releases may be determined eligible for the NPL. As one of the three methods for placing a site on the NPL, the NCP at 40 CFR 300.425(c)(1) states that a release may be included on the NPL if "[t]he release scores sufficiently high pursuant to the Hazard Ranking System as described in Appendix A to this part (40 CFR Part 300)." As indicated in the HRS documentation record as proposed for the Harbor Oil site, the site scored 48.00, which is well above the HRS cutoff score of 28.50, and it remains so after consideration of the comments received regarding the proposed listing (Page 1 of final HRS documentation record dated July 2003).

4.1.3.4 Content of HRS Package

EMRI commented "that some of the key information relied upon by EPA in its listing decision is either inadequate or inaccurate. Moreover, the HRS scoring calculation for this site cannot be replicated - in violation of EPA's own Superfund site guidance." It argued that the HRS documentation record has a number of factual errors, several apparent omissions, and generally lacks detail in its current version to support the final HRS scoring. EMRI commented that the HRS documentation record ' . . . should be sufficient for an independent observer to replicate the observations, measurements, and calculations, and arrive at the same qualitative decision . . . ' It contended that the Harbor Oil record is difficult to follow; not all the intermediate calculations for scoring were provided; and this was a source of frustration for the reviewer. EMRI requested that all calculations and assumptions need to be provided in an easy to follow format in a revised HRS documentation record.

EMRI commented that several required materials in the HRS scoring package appeared to be cursory or lacking. It commented that: The site narrative was a very brief accounting of the site's history and setting with much of the historical perspective unaccounted for and undocumented. It added that the QC checklist to be completed by the Regional reviewer, a QA [Quality Assurance] signature page to be completed by EPA Headquarters, and the NPL Characteristics Data Collection Form could not be found. It contended that if these items are present in the package, they were not clearly labeled or were otherwise buried in the supporting documentation. EMRI requested that they be made available or clearly identified. EMRI commented that the current record provided with the docket fails to provide sufficient evidence and should not be used in the scoring process, either directly or indirectly.

EMRI recommended that the HRS documentation record be revised to correctly reflect the actual information present in the docket file and to eliminate hyperbole generated from the misuse of anecdotal and unsubstantiated information. It stated that it has little faith that the document fairly and objectively represents the degree of environmental risk which this site poses to the public and the environment. It commented that, as written, the document does not support listing.

In response, EPA disagrees that the rationale for the HRS score for Harbor Oil is inadequately explained in the HRS documentation record as proposed and unsupported by the references and other data included in the HRS documentation package. In this support document, EPA has addressed all comments specific to components of the Harbor Oil HRS score and has provided supporting references adequate to justify and calculate the score.

With regard to the site narrative summary, this document contains a brief summary of the site and is not meant to be a document on the complete "history" of site activities. As prepared, the site narrative for Harbor Oil provides the public with general information on the site's location, activities that occurred at the site, contamination present, and targets impacted by site. Any information provided in the site narrative used in the HRS scoring is supported by the references in the HRS documentation record package. Additionally, while EMRI commented on the brevity of the site narrative, it did not state that there are any errors in the information provided in the narrative summary or omissions that, if provided, would alter the HRS evaluation. EPA, however, revised the site narrative to more accurately account for site operations.

With regard to the NPL Characteristics Data Collection Form, the Regional QC Checklist, and the QA signature page, while these forms are generally prepared during the preparation of the HRS site package, they do not contain information used for scoring the site and are not part of the documentation of the HRS evaluation or the HRS documentation package; these forms are completed and contain information used for tracking purposes only. The NPL Characteristics Data Collection Form contains information on the site location, years of operation, activities, types of waste, and general information on the HRS migration pathway scored in the documentation record. The NPL Characteristics Data Collection Form is used as a data entry form to enter site data into the Superfund NPL Assessment Program (SNAP) database. The Regional QC Checklist is filled out by the EPA Region NPL Coordinator and it certifies that he/she assures that the HRS package is complete and that the EPA Region requests that the site be placed on the NPL. Using that form, the NPL Regional Coordinator reviews the HRS package and completes a checklist to help ensure the package is complete and that the site is eligible for listing. The EPA QA signature page that is completed by EPA Headquarters is also a form for tracking the HRS package. Overall, while none of the forms were used to score the site, all of the site specific information they may contain can be found in the HRS documentation record and references.

4.1.3.5 HRS Guidance and Use of Primary References

EMRI commented that a number of EPA's comments on the site appear to be anecdotal information with no primary references provided for support. EMRI cited pages 27 to 28 of the *HRS Guidance Manual* in support of its comments on the HRS documentation record and references. More specifically, EMRI contended that every statement of fact that is not part of the general public's knowledge needs to be supported by a reference, and that one can presume that this refers to original references, not intermediary references that fail to provide a link to their original sources. For example, citing from page 29 of the *HRS Guidance Manual*, EMRI stated the following:

Examine very carefully the use of PA and SI reports as references. In addition to actual field observations or measurements and sampling results, these reports may contain summaries of information gathered from other documents. Ensure that the documents referenced within the PA and SI reports are reviewed and used as primary references in the HRS documentation record (Page 29 of *HRS Guidance Manual*, EPA540-R-026, OSWER Directive 9345.1-07, November 1992).

EMRI then stated that this guidance is not followed, and several of the sources, identified below, in the PA/SI reports were not provided as primary references and thus could not be evaluated.

EMRI commented that it was unable to find any of the fire marshal's reports cited in support of the HRS scoring in DEQ's Northwest Region files where it stated the Harbor Oil file is maintained. EMRI commented on the second full paragraph on page 10 of the HRS documentation record as proposed in which a 1979 fire at the site was discussed. EMRI commented that the information, "large volumes of used oils and smaller volumes of waste paints from the fire flowed across the site and into the wetlands," refers to a fire marshal's report, but neither Reference 6 of the HRS documentation record (prepared by Gil Wistar, Oregon Department of Environmental Quality)² nor the HRS documentation record provides a reference for this report. EMRI contended that the information must be considered anecdotal without having the original report available. EMRI added that because the fire marshal's report is not provided, unsubstantiated anecdotal information is also being used to described the nature of Source 2 on page 13 of the HRS documentation record as proposed. It added that recent interviews with the former manager indicate that the comments found in DEQ's reports likely exaggerated the amount of oil spilled during the fire.

EMRI also commented that a March 1974 report by Robert McHugh of DEQ titled, '*Investigation of a Fish Kill at Lake Force, West Delta Park*,' is mentioned in the text [on page 2 of Reference 7 of the HRS documentation record as proposed] but was not provided in the NPL docket file. EMRI contested the information on page 10 of the HRS documentation record which states that the work area of the Harbor Oil site is a "a mass of oil-soaked mud." EMRI contended that this information is anecdotal and without analytical or evidentiary support. In short, EMRI contended that direct access to the McHugh report could have provided a better understanding of the actual impact of the oil spill.

²EMRI referred to Reference 6 of the HRS documentation record as proposed as the "Wistar's report." Reference 6 of the HRS documentation record as proposed is titled *Strategy Recommendation, Harbor Oil*, and was prepared by Gil Wistar of the Oregon Department of Environmental Quality in 1995.

In response, the HRS site score for Harbor Oil is supported by adequate references justifying the HRS factor values assigned to allow calculation of the site score. These values were assigned according to the HRS and were supported, when necessary, by primary references. With regard to the missing attachments to References 6 and 7 of the HRS documentation record as proposed, the site score would remain the same even if the information on the quantity of waste oil spilled is disregarded in the HRS site score for Harbor Oil. See Section 4.1.3.6 of this support document, *Source 1 Eligibility*, for further discussion.

With regard to the statement that “large volumes of used oils and smaller volumes of waste paints from the fire flowed across the site and into the wetlands,” the HRS documentation record as proposed states on page 10:

In October 1979, a severe fire destroyed the facility (Ref. 6, p. 4). The fire marshal’s report indicated that the blaze started in the tank farm area, which consisted of a series of 20,000-gallon aboveground used oil tanks and a heating system used to evaporate water from the oil (Ref. 6, p. 4). The heat of the fire melted/ruptured at least five of these tanks (Ref. 6, p. 4). The incident caused large volumes of used oils and smaller volumes of waste paints to flow west and south across the site and into the wetlands and Force Lake. (Ref. 6, p. 4). There is no record of any remediation activities related to this fire and the associated release of contaminants (Ref. 4 [*Preliminary Assessment/Site Inspection Report Harbor Oil Portland Oregon*], pp.12 and 13).

EMRI is correct that the fire marshal’s report which is referred to in Reference 6 of the HRS documentation record as proposed was not available in the HRS documentation record package as proposed. A more complete copy of Reference 6 with a copy of Figures 1 through 5 was obtained from the Oregon DEQ site file for Harbor Oil and is included as Attachment A to this support document. Although the fire marshal’s report was referred to in Reference 6 of the HRS documentation record as proposed, it was not cited as support in documenting the HRS site. In the final HRS documentation record, text referring to the fire marshal’s report was removed.

With regard to the March 1974 report by Robert McHugh of DEQ titled, ‘*Investigation of a Fish Kill at Lake Force, West Delta Park*,’ EMRI is correct that this report was not available in the HRS documentation record package as proposed. However, a more complete copy of Reference 7 with a copy of *Investigation of a Fish Kill at Lake Force, West Delta Park, Multnomah County on 3/19/74* was obtained from the Oregon DEQ site file for Harbor Oil and is included as Attachment B to this support document. This report is based on an on-site investigation on March 19, 1974 by Robert McHugh and is considered a primary reference. *Investigation of a Fish Kill at Lake Force, West Delta Park, Multnomah County on 3/19/74* states:

The lake was covered by a thin film of oil, and other thicker accumulation of oil, both fresh and decomposed, had accumulated along the shorelines, which are mostly bordered by cattail marsh. . . . The source of the oil is apparentThe work area itself is a mass of oil-soaked mudThe entire face of the bluff is lined by springs and seeps, the water from which flows through the marshy areas to the lake. Seeps, together with waste water from the tank-cleaning operation keep the whole area deep in a mixture of water and oil. Along the south edge of the work area are several small oil-stained sumps filled with oil and water which drain into the lake. . . .The lower parts of [the] aquatic plants in the swamp are black with oil, and duck nesting, which is in progress elsewhere in the

area, is impossible. One dead duck, apparently trapped in the oil, was found by [an] OWC biologist. I found a dead coot on the other side of the lake. There are several other small oil seepages from the work area.

Thus, the information on page 10 of the HRS documentation record as proposed is not anecdotal and is consistent with this primary reference documenting the conditions at Force Lake and Harbor Oil on March 19, 1974. Also, it should be noted that the fish kill in Force Lake was not considered as part of the HRS site score.

4.1.3.6 Source 1 Eligibility

EMRI commented that Source 1 of the HRS documentation record as proposed, the Tank Farm, contained used oil undergoing a recycling operation involving mostly dehydration, filtration, and blending. It contended it is unclear why the products should be considered a source of hazardous material because the petroleum exclusion in CERCLA precludes petroleum as a contamination factor in NPL listings. It stated that recycled used oil is regulated under 40 CFR Part 279 and is not classified as hazardous waste under RCRA. EMRI contended that the tanks have held waste oil which, as a recycled product, is not considered to be a RCRA hazardous waste (see 40 CFR Part 279). EMRI stated that, “[t]he only hazardous constituent ‘source’ is when oil containing, e.g. PCBs, is spilled onto soil. At this point, the soil becomes a source of petroleum contamination containing potentially mobile and hazardous constituents [sic]. It is also a waste material which generally cannot be further recycled.”

EMRI also commented that the HRS documentation record cites a RCRA Permit Part A application to document the hazardous substances present in Source 1 but that the “[t]he RCRA Permit Part A application was a document which presumably addressed the potential future plans for the facility and requested EPA approval for such potential activities.” EMRI contended that the wastes estimated in the RCRA Permit Part A application were future projections and not statements of current conditions, and unless EPA has information to the contrary, it is unknown whether any of these substances were actually brought to the site. EMRI stated that it is not appropriate to use the RCRA Permit Part A application to establish what contaminants were actually present at the site. EMRI stated: “PCBs are the exception, but their presence is established separately. . . . Other than used oils, with some containing PCBs at concentration <50 ppm, there is no documentation provided for any other hazardous substances in these tanks.” EMRI requested that the HRS documentation record be revised to recognize the lack of documented information for the presence of hazardous substances in Source 1.

EMRI contested the characterization of Source 1 on page 10 of the HRS documentation record which states that the work area of the Harbor Oil site is a, “a mass of oil-soaked mud.” It explained that the site processed lignin and asphalt residues as well as used oil in its early history. It added that, had the original report been provided, it might have documented the presence of sheen on surface water confirming that petroleum product, not lignin or asphalt, accounted for the ‘oily’ look of the soil.

EMRI commented the containment berms in the tank farm, where the used oil is stored, appear to be adequate to contain any spills and that the PA/SI report states this to be the case. EMRI stated that the HRS documentation record assigned the highest containment value of 10 to Source 1 based on HRS Section 4.1.2.1.2.1.1, [Surface water] *Containment*, but that, the information presented in the last paragraph on page 10 of the HRS documentation record as proposed is based on anecdotal information.

It contended that no primary references are provided to support the containment score. It explained that References 6 and 7³, cited for containment support, do not contain any direct references for the descriptions of the post-March 1974 spill conditions or the post-October 1979 fire conditions at the site. EMRI stated that the containment value assigned to Source 1 seemed excessive.

EMRI commented that it seems more accurate to consider the [contaminated] soil [Source 2] as the only source at the site and that these soils represent past spills from a fire and an earlier spill when the facility was not well managed. EMRI added that the tanks and the soil should be considered as an aggregated source. EMRI commented that, while it is true that oil was spilled during the 1979 fire, the amount spilled compared to the amount burned has never been established. EMRI stated that it has information that contradicts the implication in the HRS documentation record that large volumes of used oils and smaller volumes of waste paints flowed west and south across the site into the wetlands and Force Lake during the 1979 fire. According to EMRI, Mr. Jim Dornbirer, former Harbor Oil General Manager, stated the spillage of oil from the fire was minimal and that very little ever reached the wetlands or Force Lake, and Mr. Dornbirer personally oversaw the cleanup of the post fire contamination.

In response to the above comments, EPA has removed the Tank Farm (Source 1) as a source for purposes of scoring this site. Although at least some of the tanks contained CERCLA eligible hazardous substances (as noted by the commenter in his acknowledgment of the presence of PCBs), EPA has revised the documentation record to exclude the Tanks Farm because there was inadequate information in the HRS documentation record at proposal to document the Tank Farm as a source and because counting both the hazardous waste quantity of the waste oil spilled from the Tanks and the contaminated soil resulting from the spills from the tanks appears to be counting the waste quantity associated with the spills twice. EPA has revised the HRS documentation record to acknowledge EMRI's comments. Also, because the tank farm is no longer considered a source for HRS scoring, cyanide, methyl ethyl ketone, 1,1,1-trichloroethane, and trichloroethylene are not evaluated as hazardous substances in the HRS documentation record for Harbor Oil. These hazardous substances were associated with Source 1 in the proposed HRS documentation record and have been removed from the waste characteristics tables and scoring in the final HRS documentation record for Harbor Oil. In the final HRS documentation record, dated July 2003, the Tank Farm is identified as another possible source at the site and is not considered in determining the HRS site score. The contaminated soil which was evaluated as Source 2 in the proposed HRS documentation record is now the only source scored in the final HRS documentation record for Harbor Oil.

Even without the consideration of the hazardous waste quantity of the former Source 1 Tank Farm, the overall site score remains unchanged in the final HRS documentation record. The surface water migration pathway hazardous waste quantity remains 100. This value is assigned according to the directions of HRS Section 2.4.2.2, *Calculation of hazardous waste quantity value*, which states that if the hazardous constituent quantity is not adequately determined for one or more sources and if any target for that migration pathway is subject to Level I or II concentrations, assign either the value from HRS Table 2-6 or a value of 100, whichever is greater as the hazardous waste quantity factor value for that pathway. The surface water migration pathway is assigned a pathway hazardous waste quantity of 100, the same as at proposal, because an observed release to Force Lake was documented, and the palustrine emergent wetland at Force Lake is subjected to Level II concentrations (Pages 18 to 21, 30, 36, and 38 final HRS

³Reference 7 of the HRS documentation record as proposed is a *1998 Strategy Recommendation Harbor Oil* prepared by Oregon Department of Environmental Quality.

documentation record for Harbor Oil (dated July 29, 2003); HRS Section 2.4.2.2, *Calculation of hazardous waste quantity factor value*). Additionally, the presence of PCBs in the contaminated soil source and in the observed release analytical data are sufficient to support the site score. PCBs will continue to support values assigned to the toxicity, ecotoxicity, persistence, and bioaccumulation factors of the waste characteristics component of the surface water migration pathway score (Pages 4 to 7, 31 to 33, and 37 to 39 of the HRS documentation record). Thus, none of the components of the HRS site score has changed, and the site score remains the same.

4.1.3.7 Source 2 Characterization

EMRI commented that, because the fire marshal report is not provided, unsubstantiated anecdotal information is also being used to describe the nature of Source 2 on page 13 of the HRS documentation record as proposed. EMRI commented that it is unclear why the contaminated soil, Source 2, was assigned a containment value of 9, whereas the tanks [Source 1] were assigned a value of 10. It then argued that, similar to the tank farm, the assigned value of 9 may be excessive and should be reconsidered because: (1) the downgradient boundaries of the site are surrounded by a berm, and (2) storm water must flow through an oil/water separator and is then discharged to the wetlands under an existing NPDES 1200 COLS permit. EMRI contended that “present containment at this site appears to be more than adequate to prevent future contamination of the wetlands or Force Lake. EMRI has operated this site under an engineer-approved SPCC [Spill Prevention Control and Countermeasures] plan.”

In response, Source 2 in the Harbor Oil HRS documentation record as proposed, Contaminated Soil, was adequately documented as a source at the Harbor Oil site. EMRI did not contest the association of hazardous substances with Source 2 of the HRS documentation record as proposed. The HRS documentation record as proposed presented analytical data from soil samples collected from Source 2. These samples document numerous hazardous substances, including PCBs, are present in contaminated soil at the site (Pages 13 through 18 of the proposed HRS documentation record).

Source 2 of the HRS documentation record as proposed was also correctly assigned a containment factor value of 9 for HRS scoring. In doing so, the “All Sources (Except Surface Impoundments, Land Treatment, Containers, and Tanks)” category of HRS Table 4-2, *Containment Factor Values For Surface Water Migration Pathway*, was considered because Source 2, in the HRS documentation record as proposed, is contaminated soil. HRS Table 4-2 states that, if there is no evidence of hazardous substance migration from the source and (a) neither of the following is present, (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, a factor value of 10 is assigned. HRS Table 4-2 then lists under (b) that if any one of the two items in (a) are present, a factor value of 9 is assigned. A containment factor value of 9 was assigned to Source 2 because there is no maintained engineered cover over the contaminated soil. In the final HRS documentation record for Harbor Oil (dated July 29, 2003), the containment factor value for the contaminated soil source remains the same.

In support of the containment factor value of 9 that was assigned to the contaminated soil source (Source 2 in the proposed HRS documentation record for Harbor Oil which is now identified as Source 1 in the final HRS documentation record for Harbor Oil), page 14 of the HRS documentation record as proposed (and page 11 of the final HRS documentation record) states the following:

Release to Surface Water via Overland Migration and/or Flood: Three on-site sumps collect surface water from general runoff and divert it to an on-site oil/water separator which drains to a 1200 COL-permitted outfall located on the southwest corner of the property (Ref. 4, p. 11; Ref. 17, pp. 3 and 7). An earthen dike surrounds the south and west sides of the site to further direct surface water runoff to the collection sumps (Ref. 4, p. 11). Since the sumps and dike may act as a functioning run-on control and run-off management system for the contaminated soil, a surface water containment factor value of 9 is assigned (Ref. 1, Table 2-4).

Additionally, by EMRI's own admission and as documented in the HRS documentation record as proposed, the 1200 COLS permit allows the discharge of storm water from the contaminated soil source through the oil/water separator to the wetlands at Force Lake. As documented from storm water monitoring data, lead was released from the discharge (Page 21 of the HRS documentation record as proposed; page 3 of Reference 17⁴ of the HRS documentation record as proposed; page 18 of the final HRS documentation record). This discharge of overland flow from the contaminated soil source is actually sufficient documentation to allow a containment factor value of 10 for this source. That is, according to HRS Table 4-2, if there is evidence of hazardous substance migration from a source, a containment factor value of 10 is assigned.

Also, although EMRI contested the assigned containment factor value for Source 2, it did not provide information that supports a different containment factor value. Rather, it concurs with the HRS documentation record as proposed that storm water is discharged from the contaminated soil source via the oil/water separator. This admission is sufficient to assign a containment factor value of 10 to the contaminated soil source as it documents that hazardous substances have migrated from the source. Hence, the containment factor value assigned to Source 2 in the proposed HRS documentation record, a value of 9, is conservative.

With regard to the discharge permit, even if discharges occur within the regulatory limits set by those Federal laws enumerated in CERCLA Section 101(10), so as to constitute "Federally-permitted releases," the discharges may be considered releases under CERCLA and, if appropriate under the HRS, placed on the NPL. This issue is discussed further in Section 4.1.3.9.2 of this support document, *Permitted Release*.

4.1.3.8 Ground Water Contamination

EMRI commented on the TCE found in the plant's deep production well to the site. EMRI stated that "[i]t should not be inferred that TCE in this well has Harbor Oil as its source nor should such information be used in the scoring process." It stated that a review of environmental reports for this general area indicates that TCE in the range detected (<10 ppb) is ubiquitous and has no specific relationship to the Harbor Oil site. EMRI cited Golder Associates, Inc., *Site Inspection and Preliminary Remediation Plan for Portland Stockyards*, prepared for Oregon Waste Systems, December 19, 1990.

⁴Reference 17 is a *Fax Containing Harbor Oil's Water Quality Permits and Monitoring Data* from the Water Control Laboratory, City of Portland, Bureau of Environmental Services.

EMRI stated that a review of the history of the area surrounding the Harbor Oil site indicates that DDT is a ubiquitous contaminant in the Columbia Slough Watershed; that it was used extensively in the Vanport housing project during World War II as a pesticide; and that runoff from the stockyards over its long history likely contributed pesticides to the wetlands area (U.S. Army Corps of Engineers, *Columbia Slough Section 1135 Restoration Project - Ecosystem Restoration Report and Environmental Assessment*, Portland district, April 2001; Maben, Manly, *Vanport*, Oregon Historical Society Press, Portland, Oregon, 1987; and Florida Department of Environmental protection, *Cattle Dipping Tanks*, downloaded from http://www.dep.state.fl.us/waste/key_areas/wc/documents/cattlevats.pdf, 5/27/02). EMRI concluded there are many potential sources for these compounds that are likely unrelated to Harbor Oil. EMRI requested that EPA acknowledge these facts and revise the HRS documentation.

In response, although the HRS documentation record as proposed presents information on ground water contamination, the release of hazardous substances from the Harbor Oil site to ground water was not evaluated as part of the HRS site score. The contamination in the ground water samples presented on page 28 of the HRS documentation record as proposed was not attributed to a specific source at Harbor Oil. Further evaluation of this contamination will proceed as the site goes through the Superfund remediation process.

Furthermore, TCE and DDT were not identified as hazardous substances found in ground water at the site (Page 28 of the HRS documentation record as proposed). TCE was associated with Source 1 at the site, the Tank Farm, in the proposed HRS documentation record. Although DDT was detected in on-site soil samples, it was not presented as a source hazardous substance for Source 2, Contaminated Soil, because insufficient information was available to attribute DDT as a contaminant in waste oil or in other waste processed at the site. The HRS documentation record as proposed states:

Since historic reports do not indicate pesticides as a contaminant in waste oil, or in other wastes reprocessed at the site, it is currently not clear whether the presence of these pesticides is a result of onsite waste handling or from the legal application of pesticides to the facility grounds (Pages 28 to 29 of the HRS documentation record as proposed).

Moreover, at listing, the full extent of contamination attributable to Harbor Oil and the possibility that there may be sources contributing to ground water contamination have not been fully defined. Following listing, an RI/FS may be completed and a remedial action may be selected. Until the investigation process has been completed and a remedial action (if any) selected, EPA generally does not attempt to estimate the full extent of contamination at the site or describe the ultimate dimensions of the NPL site. Even during or following a remedial action (e.g., the removal of buried drums), EPA may find that the contamination has spread further than or not as far as previously estimated, and the known area of the site may be correspondingly adjusted.

4.1.3.9 Surface Water Migration Pathway

EMRI commented on the surface water migration pathway. Its comments are addressed in the following sections of this support document: Overland/Flood Migration Component (Section 4.1.3.9.1), Observed Release (Section 4.1.3.9.2), Target: Force Lake as a Fishery (Section 4.1.3.9.3), and Fish Kill in Force Lake (Section 4.1.3.9.4).

4.1.3.9.1 Overland/Flood Migration Component

EMRI contested the information on page 20 of the HRS documentation record which states, according to EMRI, the source of water in the area of Force Lake is springs and seeps and that the area acts as a sink for surface water. EMRI argued that this information implies that there is no direct outlet for water accumulation other than subsurface flow. EMRI presented the following information:

In fact, water from Force Lake flows through ditches and small lakes to the south side of Peninsula Drainage District No. 1 (Pen1) and is subsequently pumped over the dike into the Columbia Slough. The Columbia Slough in turn flows west into Willamette River near its confluence with the Columbia River (see *Natural Resources Management Plan for Peninsula Drainage District No. 1* by Bureau of Planning, Portland, Oregon, 12 July 1997).

In response, Force Lake is depicted in the HRS documentation record as proposed and Reference 3 of the HRS documentation record, a U.S. Geological Survey (USGS) 7.5 x15 minute series Topographic Map, Portland, Oregon, as a perennial isolated lake. Force Lake passes through numerous culverts and ultimately enters the Columbia Slough. These culverts draining from Force Lake are intermittently flowing water bodies and, thus, are not eligible as HRS surface water bodies. HRS Section 4.02, *Surface water categories*, classifies and defines surface water for HRS purposes as including (under Lakes):

- Natural and man-made lakes (including impoundments) that lie along rivers, but excluding the Great Lakes.
- Isolated but perennial lakes, ponds, and wetlands.
- Static water channels or oxbow lakes contiguous to rivers.
- Small rivers, without diking, that merge into surrounding perennially inundated wetlands.
- Wetlands contiguous to water bodies defined as lakes.

For HRS purposes, Force Lake is considered a surface water body because it is an isolated but perennial lake. The palustrine wetland contiguous to Force Lake is considered a surface water body because it is a wetland contiguous to a water body defined as a lake.

If there is a surface water body extending from Force Lake to the Columbia Slough or there is pumping of water from Force Lake into the Columbia Slough, these waters are intermittent and are not marked on the USGS map included as Reference 3 of the HRS documentation record as proposed. Intermittent water bodies in areas receiving 20 or more inches of mean annual precipitation do not count as surface water in the HRS (HRS Section 4.0.2, *Surface water categories*).

Additionally, if there are other perennial surface water bodies extending from Force Lake, they would only extend the surface water migration pathway target distance limit and, thus, allow other targets to be scored as potentially contaminated targets, and increase the HRS score. However, as presented in the HRS documentation record as proposed, EPA is not aware of any *perennial* surface water bodies extending from Force Lake.

In addition, the evaluation of Force Lake as an isolated water body is supported by the information in *Natural Resources Management Plan for Peninsula Drainage District No. 1* (Bureau of Planning, Portland, Oregon, 12 July 1997) which is cited by EMRI in its comments. This document states:

Force Lake has no major inlet of water which leads to a considerable buildup of organic and other sediments. It only receives surface runoff from the golf course, adjacent commercial and industrial sources, and roadways. . . . Outflows from Force Lake are much less than anticipated inflows for all events, and are minimal for storms less than the two year event. Consequently, pollutants conveyed to the lake by runoff from sub-basin A-7 will, without additional in-flow, remain in the Lake and not be transmitted downstream. (Pages 38 - 40 of *Natural Resources Management Plan for Peninsula Drainage District No. 1*) (http://www.planning.ci.portland.or.us/pdf/env_peninsula_drainage_plan1.pdf).

This comment does affect the site score for Harbor Oil.

4.1.3.9.2 Observed Release

EMRI commented on the 1200 COLS permit⁵ discussed on page 21 of the HRS documentation record as part of the observed release by direct observation. Regarding this storm water permit, EMRI contended that, although the lead levels exceeded the permit levels on two occasions, the lead level exceeded was a benchmark value, not a permitted value. EMRI contended that the purpose of the benchmark is to create a target level that the operator should try not to exceed rather than a strict permit level that can never be exceeded.

EMRI also contended that all of the analytes, except PCBs, listed as meeting the observed release criteria in Table 4 on page 23 of the HRS documentation record are present in virgin oil. It explained that levels in used oil can increase over virgin oil levels for some analytes, but they are common contaminants in petroleum product, whether they are virgin product or used products. According to EMRI, separating the contributions of virgin petroleum products from used oil would be a daunting task under the circumstances inherent at this site.

In response, the observed release by direct observation and chemical analysis from Harbor Oil based on the permitted discharge was correctly evaluated. The HRS allows for an observed release to be established by direct observation or by chemical analysis, both of which were documented at the Harbor Oil site (HRS Section 2.3, *Likelihood of release*).

With regard to the observed release either by chemical analysis or direct observation, the hazardous substances identified in the wetland on Force Lake are eligible for consideration because the CERCLA petroleum exclusion does not apply to all released hazardous substances associated with Harbor Oil. The intent of the CERCLA petroleum exclusion is to exclude petroleum, including crude oil and fractions thereof. Historically, EPA has interpreted CERCLA Section 101(14), which discusses the petroleum

⁵1200 COLS permits are NPDES storm water permits issued for industrial activities in the Columbia Slough watershed (<http://www.deq.state.or.us/wq/wqpermit/stormwa.pdf>). At Harbor Oil, on-site sumps collect surface water from general runoff and divert it to an on-site oil/water separator. Treated storm water from the oil/water separator is discharged into wetlands west and south of the site via a 1200 COLS-permitted outfall (Page 21 of HRS documentation record; Reference 4, page 11; Reference 17).

exclusion, to cover crude oil and the crude oil constituents that are indigenous to the petroleum, or that are normally mixed with or added to crude oil or crude oil fractions during the refining process.

However, hazardous substances that are mixed with or increase in concentration as a result of contamination of the petroleum post refining or during disposal are not considered petroleum and are, therefore, regulated under CERCLA. This includes the PCBs identified in this waste, as acknowledged by the commenter. EPA's position on the petroleum exclusion is explained in a memorandum dated July 31, 1997 by Francis Blake, EPA General Counsel (<http://www.epa.gov/Compliance/resources/policies/cleanup/superfund/petro-exclu-mem.pdf>). This position that hazardous substances that are added to petroleum after refining or that increase in concentration solely as a result of contamination of the petroleum during use are not part of the petroleum and are exempt from the petroleum exclusion has been upheld by a number of courts (*Cose v Getty Co.*, 4 F.3d 700 (9th Cir. 1993) and *United States of America v. The Western Processing Company, Inc.* 761 F.Supp. 713, (W.D. Wash. 1991)).

Regarding the observed release by direct observation, on page 21 of the HRS documentation record as proposed, an observed release by direct observation from the Harbor Oil site was identified based on multiple releases. All of these releases meet the observed release by direct observation criteria that a material containing a hazardous substance has been seen entering surface water through migration or is known to have entered surface water through direct deposition (HRS Section a 4.1.2.1.1, *Observed release*). However, the information discussing the 1979 fire and the associated fire marshal's report were removed from the final HRS documentation record because the fire marshal's report was not available for review.

Even without the identification of an observed release by direct observation based on the 1979 fire, it is correct to identify an observed release by direct observation based on the discharges via the 1200 COLS-permitted outfall and the 1974 spill. Section 2.3 of the HRS (55 FR 51589, December 14, 1990) states that an observed release can be established either by direct observation or by chemical analysis. An observed release by direct observation can be established when a material that contains a hazardous substance is seen or is known to have entered surface water, or a source containing a hazardous substance has been in contact with flood waters, or there is evidence supporting the inference of a release of a material containing a hazardous substance demonstrated by adverse effects associated with that release. The 1974 spill is documented in a *Investigation of a Fish Kill at Lake Force, West Delta Park, Multnomah County on 3/19/74* which is included as Appendix B to this support document. The two observed releases by direct observation based on discharges via the 1200 COLS-permitted outfall are supported by Reference 17 of the HRS documentation record at proposal which is a *Fax containing Harbor Oil's water quality permits and monitoring data* (City of Portland Bureau of Environmental Services, Water Pollution Control Laboratory). This reference documents that lead was released from the outfall at levels actually above the permitted levels. It documents that benchmarks for lead, copper and zinc were added to the permit in 1998, and since the addition of these "benchmarks," two releases via the outfall were not within the levels of lead concentration listed as benchmarks on the 1200 COLS permit. In Reference 17, the 1200 COLS permit benchmark for lead is listed as 0.006 [mg/l] and the two releases of lead above the benchmark are at concentrations of are 0.0126 [mg/L] on 12/22/2000 and 0.00692 [mg/L] on 03/02/2000 (Page 3 of Reference 17). EMRI is reported as the "Tester" for three of the monitoring lead results, and two of those three were the lead releases that were above the 1200 COLS permit benchmark (Page 3 of Reference 17 of the HRS documentation record as proposed).

Furthermore, releases via permitted outfalls are eligible for HRS evaluation regardless of whether there is an exceedance of the target concentration. On July 16, 1982, when responding to public comments on the proposed (original) HRS (47 FR 31188), and again on September 8, 1983 (48 FR 40665), the Agency rejected the idea that releases within regulatory limits should not be considered "observed releases" under the HRS. As the Agency noted in 1982,

emission or effluent limits do not necessarily represent levels which cause no harm to public health or the environment. These limitations are frequently established on the basis of economic impacts or achievability.

By contrast, an observed release represents a 100 percent likelihood that substances can migrate from the site (47 FR 31188, July 16, 1982).

Of course, the observed release factor alone is not intended to reflect the hazard presented by the particular release. Instead, the hazard of the site is approximated by the total HRS score, which incorporates the observed release factors with other factors such as waste characteristics (including waste quantity, toxicity, and persistence) and targets. For example, the HRS does consider whether releases are above HRS health based and ecological benchmarks in evaluating target populations, increasing by a factor of 10 the weight assigned populations exposed to contaminants above those benchmarks. This total HRS score reflects the hazard of the site relative only to the other sites that have been scored. The actual degree of contamination and its effects are more fully determined during the Remedial Investigation that typically follows listing.

4.1.3.9.3 Target: Force Lake as a Fishery

EMRI contended that Force Lake should not be considered a viable fishery because of the following reasons:

- The Slough is considered to be 'water-quality limited for DDE, DDT, PCBs, and dioxin due to elevated levels found in fish tissue.' William Fish states that both the State of Oregon Health Division and the City of Portland have recommended that fish caught in the Slough not be consumed due to the presence of these contaminants. (Fish, William, *Overview of the Columbia Slough*, Portland State University, downloaded 4/8/02 from <http://www.ce.pdx.edu/~fishw/ECR-SloughDescription.htm>).
- The U.S. Army Corps of Engineers states that bacteria and lead in the water column also were parameters limiting water quality (U.S. Army Corps of Engineers, *Columbia Slough Section 1135 Restoration Project - Ecosystem Restoration report and Environmental Assessment*, Portland District, April 2001).
- Bureau of Environmental Services has a fish advisory for Slough fish in its Columbia Slough watershed Web page. Thus, fishing should not be allowed in Force Lake because it is considered to be part of the Columbia Slough watershed. (City of Portland, Bureau of Environmental Services, Columbia Slough watershed, downloaded 4/8/02, http://www.cleanrivers-pdx.org/clean_rivers/ws_columbia_slough.htm).

- Fishman Environmental Services collected 3000 fish from Force Lake in 1988, and their sizes ranged from <20 mm to 390 mm (15 inches). All but 54 fish were <20 mm in size. The only two fish over 250 mm caught (carp, 300 mm and 390 mm) had either a deformed spine or severe body lesions.

According to EMRI, fishing should be banned from Force Lake, and banning fishing would eliminate the human consumption pathway.

In response, Force Lake was correctly evaluated as a fishery under the HRS. According to HRS Section 4.1.3.3, *Human food chain threat targets*, consider a fishery (or portion of a fishery) within the target distance limit of the watershed to be subject to actual or potential human food chain contamination if any of the following apply:

- A hazardous substance having a bioaccumulation potential factor value of 500 or greater is present either in an observed release by direct observation to the watershed or in a surface water or sediment sample from the watershed at a level that meets the criteria for an observed release to the watershed from the site
- The fishery is closed, and a hazardous substance for which the fishery has been closed has been documented in an observed release to the watershed from the site. . . .
- A hazardous substance is present in a tissue sample from an essentially sessile, benthic, human food chain organism from the watershed at a level that meets the criteria for an observed release

EPA procedures for documenting the presence of a fishery for HRS purposes are explained in the *HRS Guidance Manual* on page 294. Before evaluating the level of contamination, one should document that the surface water body under evaluation is a fishery and collect evidence to document both of the following:

- Human food chain organisms are present in the surface water body; and
- Some attempt has been made to catch those human food chain organisms.

On page 35 of the Harbor Oil HRS documentation record as proposed, Force Lake has been adequately documented as a fishery eligible for evaluation. It states:

Force Lake supports fishing activities (Ref. 7, p. 4). During the PA/SI, consultants for the EPA interviewed fishermen on Force Lake who indicated that they catch and eat fish from the lake (Ref. 4, p.15A; Ref. 9, p. 4). During the PA/SI, one sediment sample was collected from wetlands along the bank of Force Lake (Ref. 9, p.22) (Page 35 of the HRS documentation record as proposed).

On pages 22 and 23 of the HRS documentation record as proposed, sediment samples WL01SD, WL02SD, and WL05SD have been used to document an observed release by chemical analysis in Force Lake. These samples contain several hazardous substances (i.e., cadmium, copper, mercury, zinc, PCB-1260, anthracene, chrysene, fluoranthene, naphthalene, 2-methylnaphthalene) with a bioaccumulation

factor value of 500 or greater (Pages 23, 31, 32, and 34 of the HRS documentation record as proposed). EPA notes the cadmium, copper, mercury, zinc, and PCB-1260 are not inherent in petroleum.

Thus, it has been documented that human food chain organisms are caught for consumption from Force Lake, and that hazardous substances attributable to the site and with a bioaccumulation factor value of 500 or greater are present in Force Lake. Hence, people are actually consuming fish that could contain significant levels of released hazardous substances, regardless of whether the Lake should or should not be fished.

Regarding the HRS level of contamination (Level I, Level II, or potential) evaluated for Force Lake for the Harbor Oil site score, Force Lake was evaluated as potentially contaminated fishery because fishing has not been documented in the zone of contamination as defined by the locations of the observed release samples from this site (HRS Sections 2.5, *Targets*, and 4.1.3.3.2.3, *Potential human food chain*; page 35 of the HRS documentation record).

In considering the commenter's statements that Force Lake should not be considered a fishery due to water quality issues, fishing advisories, and the quality of the fish in Force Lake, while these factors may reflect the level of contamination within a surface water body on a site by site basis, the documentation of Force Lake as a fishery is based on HRS Section 4.1.3.3 and the guidance provided in the *HRS Guidance Manual*, as cited above. The poor quality of Force Lake further supports why EPA has identified that the fishery in the lake is a target and the threat is significant.

Furthermore, even if Force Lake was a closed fishery due to releases from Harbor Oil, the Force Lake fishery would still be eligible for HRS evaluation. EPA believes that not including a closed fishery in an HRS scoring would artificially shield a closed fishery from further remediation, and that in such cases the initial targets factor (the conditions at the time the fishery was closed) should be used to reflect the adverse impacts caused by the contamination. This position is explained in the preamble the final HRS (55 FR 51568), regarding the parallel situation, when alternative drinking water supplies have been provided such that a contaminated aquifer is no longer used. Hence, EMRI's comment that banning fishing in Force Lake would eliminate Force Lake as fishery for HRS evaluation is incorrect.

4.1.3.9.4 Fish Kill in Force Lake

EMRI commented that the original 1974 report documenting a fish kill is referenced in Reference 7 of the HRS documentation record and should have been included as an Appendix to Reference 7, but that EPA failed to include this appendix in the docket file. It argued that no information on the size and distribution of fish killed, or what caused the fish kill could be obtained. EMRI made the following additional comments on the 1974 fish kill:

- It would be worthwhile for EPA to determine whether the petroleum products killed the fish or whether it was the hazardous constituents contained in the oil.
- It was likely the oil caused the fish kill, rather than the hazardous components because the oil would have been present in much greater quantity than the trace constituents it may have contained.

- If the petroleum component killed the fish, this incident may have little bearing on the scoring of this site because petroleum products apparently are not to be considered as part of the HRS scoring scheme.

In response, the 1974 fish kill was not used for any HRS scoring purposes for the Harbor Oil site. The specific cause of the fish kill will be investigated later, if necessary, as part of further investigations. A complete copy of Reference 7 with a copy of *Investigation of a Fish Kill at Lake Force, West Delta Park, Multnomah County on 3/19/74* was obtained from the Oregon DEQ site file for Harbor Oil and is included as Attachment B to this support document.

4.1.3.10 Minor HRS Documentation Record Issues

EMRI made several editorial comments on the HRS documentation record and its associated references. The following bulleted comments were made by EMRI, and EPA's responses are in italicized text following the bulleted comments:

- EMRI commented that References 5 and 8 were not cited in the HRS documentation record.

EPA notes that Reference 8 of the HRS documentation record, Harbor Oil Preliminary Assessment/Site Inspection Chain of Custody Forms and Federal Express Airbills (July and August 2000), is cited on page 13 (third paragraph) and on page 21 (last paragraph) of the HRS documentation record as proposed.

EPA notes that Reference 5, Sampling and Quality Assurance Plan Harbor Oil, Portland, Oregon, is cited in the third paragraph on page 13 of the HRS documentation record as proposed.

- EMRI commented that the first paragraph on page 10 of the HRS documentation record lists Reference 6, page 3 for the following information, 'a mass of oil-soaked mud,' but this quote is found on page 2, not page 3 of Reference 6. EMRI commented on the second full paragraph on page 10 of the HRS documentation record in which a 1979 fire at the site was discussed. EMRI commented that the information, "large volumes of used oils and smaller volumes of waste paints' from the fire flowed across the site and into the wetlands" is found on page 3, not page 4 of Reference 6.

According to the reference list on page 8 of the HRS documentation record as proposed, Reference 6 contains 21 pages. If EMRI followed the page numbers at the top right corner of this reference, it will note that the HRS documentation record as proposed has correctly cited the information from pages 3 and 4 of Reference 6, not pages 2 and 3, respectively, as EMRI commented. Also see Attachment B to this support document which is a more complete copy of Reference 6 which now contains 25 pages.

- EMRI commented that only three of the five pages of the RCRA Permit Part A, which was submitted as Reference 18 of the HRS documentation record, are provided in the NPL docket file.

EPA notes that EMRI is correct that Reference 18 should have a total of 5 pages, but only 3 pages were included in the HRS documentation record package. A more complete copy of Reference 18 was

obtained from the Oregon DEQ site file for Harbor Oil and is included as Attachment C to this support document. EPA notes that page 4 of this reference is still unavailable. The information in Reference 18 is not used to support the HRS site score. In the proposed HRS documentation record, Reference 18 was used to characterize the tank farm source. In the final HRS documentation record, the tanks are not considered as a source in the HRS score of Harbor Oil. Thus, this comment has no impact on the HRS evaluation of Harbor Oil.

- EMRI commented that on page 21 of the HRS documentation record, it states that ODEQ inspections found “severe” problems at the site. EMRI contested that the term “severe” is subjective and should be quantified and documented.

EPA notes that the reference cited for this information, page 2 of Reference 7, states that “inspectors have documented severe problems with discharges and runoff. . .” The use of the term “severe” to document site conditions has no bearing on HRS evaluation of the site. The term is cited from the reference documenting the observations made by ODEQ personnel during their inspection of the Harbor Oil facility.

- EMRI noted that much of the information on page 25 of the HRS documentation, under Attribution, is repeated in the document several times.

EPA notes that page 25 of the HRS documentation record as proposed discusses the attribution of the observed release of hazardous substances to the Harbor Oil site. HRS Section 2.3, Likelihood of release, requires “some portion of the release must be attributable to the site.” For this reason, the information documenting an observed release from the site must also show that the release is at least partially attributable to the site. If EMRI considers that the release is not attributable to the Harbor Oil site, then it must comment on specific factors influencing the observed release and attribution of the release to Harbor Oil. Additionally, regardless of whether the information supporting the attribution of the release to Harbor Oil is repeated throughout the document, unless it is inaccurate, EMRI’s comment has no effect on the site evaluation.

- EMRI noted that References 6 (1995 Oregon DEQ, Strategy Recommendation, Harbor Oil, Inc.) and 7 (1998 Oregon DEQ, Strategy Recommendation, Harbor Oil, Inc.) appear to have pages interchanged; specifically, the 1995 report (Reference 6) has pages included from the 1998 report (Reference 7).

EPA notes that pages 10 and 11 of Reference 6, 1995 Oregon DEQ, Strategy Recommendation, Harbor Oil, Inc., were incorrectly placed within Reference 6 of the HRS documentation record package as proposed. These two pages should be included as part of Reference 7, 1998 Oregon DEQ, Strategy Recommendation, Harbor Oil, Inc; they are part of a February 19, 1998 site assessment prioritization system scoresheet for Harbor Oil. However, this information was not used in support of the HRS site score.

- EMRI noted that none of the figures (Figures 1 through 5) in Reference 6 (the 1995 Strategy Recommendation) were provided in the NPL docket file. It added that Reference 6 has unsubstantiated anecdotal information and is incomplete. It contended that the nature of a spill such as the 1974 and 1979 incidents cannot be put in proper perspective without the availability of primary information such as reports, field notes, clear photographs, well documented sample locations, and appropriate sample analysis results.

EPA notes that Figures 1 through 5 of Reference 6 of the HRS documentation record were not included in the HRS documentation record package as proposed. A copy of Reference 6 with Figures 1 through 5 was obtained from Oregon DEQ site file for Harbor Oil and is included as Attachment A to this support document. Figures 1 through 5 contain site descriptive information but are not used to document the HRS score for Harbor Oil.

- EMRI noted that the HRS documentation record states that sampling point BG01 is correctly located but mislabeled as the production well (see page 14 of the HRS documentation record and page 22 and Figure 3-1 of Reference 4 of the HRS documentation record). EMRI contended that, in fact, Figure 3-1 is correctly labeled, and both the production well and sample BG01 are shown at their proper locations and properly labeled.

The field log book detailing the sample collection for the sample BG01 location was submitted as Reference 9 of the HRS documentation record as proposed, Harbor Oil Preliminary Site Inspection, Site Logbooks. Sample location BG01 is the location for three soil samples, BG01SS01 BG01SB04, and BG01SB08 which were collected at depths of 12 to 24 inches, 4 to 8 feet, and 8 to 12 feet, respectively. These samples were collected on July 31, 2000 (Pages 11 and 21 of Reference 9 of the HRS documentation record as proposed). Figure 3-1 of Reference 4 of the HRS documentation record as proposed incorrectly labels sample location BG01 with the symbol used for a production well. EPA notes this error. However, Table 6-1 (Soil Surface Soil Samples Analytical Results Summary Harbor Oil Preliminary Assessment/Site Inspection, Portland Oregon); Table 6-2 (Soil Subsurface Soil Samples (2 to 8 feet bgs⁶) Analytical Results Summary Harbor Oil Preliminary Assessment/Site Inspection, Portland Oregon); and Table 6-3 (Soil Subsurface Soil Samples (6 to 20 feet bgs) Analytical Results Summary Harbor Oil Preliminary Assessment/Site Inspection, Portland Oregon) of Reference 4 correctly describe the samples collected from sample location BG01 as soil samples (Pages 35 to 40 of Reference 4 of the HRS documentation record). Thus, samples collected from sample location BG01 were not collected from a production well; rather, these samples were collected as surface and subsurface soil samples.

EPA notes that none of the above comments impacted the HRS site score for Harbor Oil.

4.1.4 Conclusion

The original HRS score for this site was 48.00. Based on the above response to comments, the score remains unchanged. The final scores for the Harbor Oil site are:

Ground Water:	Not scored
Surface Water:	96.00
Soil Exposure:	Not Scored
Air:	Not Scored
HRS Score:	48.00

⁶below ground surface